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ABSTRACT

This compilation lists research completed in the areas of health, physical education, and recreation and allied areas during 1972. It is arranged in three parts: (a) the index lists research topics alphabetically and directs the reader to appropriate citations in the bibliographies of journal articles, theses, and dissertations; (b) the bibliography lists published research alphabetically by author, citing articles which were published in 177 periodicals; and (c) theses abstracts includes items from 62 institutions offering graduate programs in health, physical education, and recreation. Also included are lists of the periodicals reviewed and the institutions reporting. (HMD)

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COMPLETED RESEARCH
in Health, Physical Education, and Recreation

including international sources

Volume 15 1973 Edition

covering research completed in 1972

Edited by **ROBERT N. SINGER** and **RAYMOND A. WEISS**
for the RESEARCH COUNCIL of the AMERICAN ASSOCIATION
FOR HEALTH, PHYSICAL EDUCATION, AND RECREATION

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COMMITTEE ON COMPLETED RESEARCH IN HEALTH, PHYSICAL EDUCATION AND RECREATION

1973-1974

Helen M. Eckert
Department of Physical Education
University of California
Berkeley, California 94720

Peter W. Everett
Department of Physical Education,
Health, and Recreation
Florida State University
Tallahassee, Florida 32306

Barry L. Johnson
Department of Health and
Physical Education
Northeast Louisiana State College
Monroe, Louisiana 71201

Gerald S. Kenyon
School of Physical Education
University of Waterloo
Waterloo, Ontario, Canada

Lloyd L. Laubach
335 West Center College, Apt. 132
Yellow Springs, Ohio 45387

Kenneth D. Miller
Department of Physical Education,
Health and Recreation
Florida State University
Tallahassee, Florida 32306

Emery W. Seymour
Springfield College
Springfield, Massachusetts 01109

Robert N. Singer
(Co-chairman for Thesis Abstracts)
Department of Physical Education,
Health and Recreation
Florida State University
Tallahassee, Florida 32306

Jerry R. Thomas
Division of Health,
Physical Education and Recreation
Georgia Southern College
Statesboro, Georgia 30458

Celeste Ulrich
Department of Health, Physical
Education and Recreation
for Women
University of North Carolina
Greensboro, North Carolina 27412

Raymond A. Weiss
(Co-chairman for Bibliography)
Division of Physical Education,
Health, and Recreation
School of Education
New York University
New York, New York 10003

v/v/

DEDICATED to the International Council on Health, Physical Education, and Recreation by its United States member the American Association for Health, Physical Education, and Recreation, to share this compilation with other member organizations of ICHPER and thus to extend knowledge in these fields. This annual volume is published in keeping with ICHPER's objective of exchanging research among professional workers throughout the world and furthering advancement in health education, physical education, and recreation.

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INTRODUCTION

This compilation lists research completed in the areas of health, physical education, recreation and allied areas during 1972. It is arranged in three parts.

I. Index. In this section, cross references are given for all the listings in Parts II and III. References are arranged under the subject headings, which are in alphabetical order. Instructions for using the index are given at the top of page 1.

II. Bibliography. This is a listing of published research, citing articles published in the 177 periodicals reviewed by the Committee for *Completed Research*. The periodicals reviewed are listed on pages 169 through 170.

III. Theses Abstracts. These are master's and doctor's theses from 62 institutions offering graduate programs in health, physical education, recreation, and allied areas. Institutions reporting are listed on pages 171 and 172. Most references are accompanied by abstracts of the research and all are numbered in alphabetical order according to the institution. Names of institutional representatives sending in these abstracts are indicated in parentheses after the name of the institution; major professors are in parentheses after each reference.

Universities and colleges are encouraged to submit abstracts of theses completed at their institutions in the year 1973 for inclusion in the next issue of *Completed Research*. Material should be sent to Robert N. Singer, Chairman for Theses Abstracts.

Robert N. Singer
Raymond A. Weiss
Co-Chairman
Committee on Completed Research

PART I—INDEX

This index enables the reader to refer to the items of completed research listed in Parts II and III. Research topics are arranged in alphabetical order. The reference numbers following each topic correspond to the listings of completed research dealing with that topic. The capital letter B indicates a reference to be found in the Bibliography (Part II); the capital letter T indicates a reference to be found in the Theses Abstracts (Part III).

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PART III—THESES ABSTRACTS

Abbreviations appearing in this publication:

AAHPER = American Association for Health, Physical Education, and Recreation
(abbreviate all familiar organizations, e.g., AAU, NCAA, etc.)
AD = athletic director
ANCOVA = analysis of covariance
ANOVA = analysis of variance
BTPS = body temp. pressure saturated
C = centigrade
CA = chronological age
CO_2 = carbon dioxide
X^2 = chi square
o = degrees
dept. = department
ELE = elementary
EKG = electrocardiogram
EMG = electromyogram
EMR = educable mentally retarded
exp. = experiment or experimental
F = Fahrenheit
F = *F* ratio
FPS = frames per second
FEV 1.0 or 2.0 = forced expiratory volume
gm. = gram
GPA = grade point average
HE = health education
ht. = height
HR = heart rate
IQ = intelligence quotient
JHS(s) = junior high schools
kg. = kilogram
kg/m = kilogram per meter
kpm/min = kilopondmeter per minute
KR = knowledge of results
max. = maximum or maximal
M = mean
measurement, units of*
mm. = millimeter
mph = miles per hour
msec. = millisecond(s)
MT = movement time
no. = number (in text, e.g., in the total no. of days . . .)
N = number (e.g., of subjects) all numbers in arabic form (e.g., 1, 2, 3, etc., 1st, 2nd, 3rd, etc.)
N_2 = nitrogen
O_2 = oxygen
p = probability ($p < .05$ = significance greater than .05 level, $p > .01$ = nonsignificance at the .01 level)
PE = physical education
PR = pulse rate
% = percent
psi = pounds per square inch
r = correlation
REC = recreation
rpm = revolutions per minute
RT = reaction time

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*inc. = inch; sec. = second, wk. = week, hr. = hour, etc.

SV = stroke volume
SD = standard deviation
SHS(s) = senior high school(s)
STPD = standard temp. pressure dry
S(s) = subject(s); S's = subject's (possessive) fresh., soph., jr., sr.
t = t ratio
tests**
temp. = temperature
U.S. = United States
USSR = Union of Soviet Socialist Republic
wt. = weight
VO_2 = oxygen uptake
V_E = ventilation equivalent
YMCA = Young Men's Christian Association
V_T = tidal volume
YWCA = Young Women's Christian Association

**Abbreviate all kinds of performance tests if possible (e.g., CPI = California Psychological Inventory, Cattell 16 PF = Cattell 16 Personality Factor Inventory, MMPI = Minnesota Multiphasic Personality Inventory).

ABSTRACTS

Appalachian State University, Boone, North Carolina (J. T. Kearney)

1. **McKETHAN, James F.** *The effects of isometrics, isotonics, and combined isometrics-isotonics on quadriceps strength and vertical jumping performance.* M.S. in Physical Education, 1972. 96 p. (R. E. Thomas)

The relative effects of a training program involving isometrics, isotonics, or a combination of isometrics--isotonics on quadriceps strength and vertical jumping ability was studied. Male Ss (N=24) were assigned to 1 of 3 exp. groups or to a control condition. Vertical jumping performance was evaluated by the jump-and-reach procedure and cable tension tests were used to measure quadriceps strength. The training for the isometric group involved 16-sec. max. isometric bout at each of 90°, 110°, and 130° of knee extension. The isotonic groups trained by utilizing max. knee extensions. The combined group trained by performing an isometric contraction at 90° and then completing the knee extension against isotonic resistance. The results were: At the conclusion of training the quadriceps strength of the isometric exercise group was greater than that of the control group. Other among-groups comparisons were nonsignificant; within group gains in quadriceps strength occurred for each of the 3 training procedures; and there were no differences among or within the groups in relation to vertical jumping ability.

2. **TESTERMAN, Violet M.** *A comparative study of certain personality traits between physical education majors and nonmajors at Appalachian State University.* M.A. in Physical Education, 1972. 32 p. (R. M. Tomlinson)

A personal background questionnaire and the Edwards Personal Preference Schedule were administered to 50 female jr. or sr. PE majors and 50 female jr. or sr. Ss from other disciplines on campus. The results indicated that the backgrounds of the 2 groups were quite comparable. In regard to the personality variables identified by the Edwards Schedule the PE majors exhibited greater levels of dominance and a lower achievement level. No differences were obtained between the 2 groups on deference, order, exhibition, autonomy, affiliation, interacception, succorance, abasement, nurturance, change, endurance, or heterosexuality.

University of Arkansas, Fayetteville, Arkansas (G. C. Moore)

3. **BESTOR, Glenn L.** *The effects of an isotonic weight training program on speed in three competitive strokes in college swimming.* Ed.D. in Physical Education, 1972. 68 p. (G. C. Moore)

The effectiveness on speed in 3 competitive 50-yd. strokes (front crawl, back crawl, breaststroke) between a training program of interval swimming, kicking and pulling, and the same program supplemented with isotonic wt. training was investigated. Members of the Wisconsin State Univ. varsity swimming team (N=20) were divided into the 2 programs. The exp. lasted 8 wk. Three 1-way ANOVAs were performed on the pre and posttimes on all 3 strokes. Conclusion was that when equivalent practice time is utilized, an interval swimming program supplemented by isotonic wt. exercises is no more effective than an interval swimming program alone.

4. **CHEEK, Don L.** *Effects of anabolic steroids on selected physiological measures taken on albino rats.* Ed.D. in Physical Education, 1972. 100 p. (G. C. Moore)

The effects of the anabolic steroid, methandrostenolone (Dianabol) on selected physiological measures was studied. Measures taken were: body wt.; absolute and relative organ wt. (heart, liver, left kidney, left adrenal, left testis, and levator ani muscle); blood measures (hematocrit, hemoglobin, lactic dehydrogenase, serum glutamic oxalacetic transaminase, cholesterol, and serum protein); and running and jumping performance. Male albino rats (N=48) were divided into 3 groups. One trained on a motor driven treadmill. Another trained to jump to progressively higher platforms to avoid shock. The 3rd group was a sedentary control. The exp. period was 8 wk. The rats were further subdivided into drug and control groups. Half of each exp. group were injected 3 times wk. with a .5% solution of Dianabol. The other half were injected with a placebo. Two-way ANOVA was employed. Conclusions were that Dianabol injections produced reductions in testical wt. Other measures were not affected. Comparing sedentary with exercise groups, the only change was with the treadmill group where there was greater adrenal hypertrophy.

5. **GREEN, Kenneth N.** *The development of a battery of golf skill tests for college men.* Ed.D. in Physical Education, 1972. 111 p. (R. R. Ryan)

College men (N=49) were Ss used to determine the reliabilities of 6 golfing skill tests: short-putt, 8 trials from 4 ft.; long-putt, 6 trials from 25 ft.; chip shot, 6 trials from 35 ft.; pitch shot, 6 trials from 40 yd.; middle-distance shot, 4 trials from 120 yd.; and drive shot, 4 trials measured in perpendicular distance from the tee. Then, 66 college men were used to validate test batteries using the 36 hole score as criterion. Step-wise multiple regression was employed. The best single predictor was the middle-distance shot ($R = .658$). The best 2-item battery was the middle-distance shot and the pitch shot.

6. HOLT, Hansford E. *Two jogging programs of different speeds related to the cardiovascular fitness of middle-aged men.* Ed.D. in Physical Education, 1972. 104 p. (G. C. Moore)

A fast-jog program (1.5 miles in 12 min.) was compared with a slow-jog program (1.5 miles in 15 min.) as to effects on the cardiovascular fitness and body wt. of middle-aged men. Middle-aged volunteers (N=48) were divided into 2 exp. groups. Twenty-three men served as a nonjogging control group. The program lasted 12 wk. All groups were compared with each other on the Ohio State Univ. Step Test and total body wt. The 2 jogging groups were also compared on the Cooper 1.5 mile test at 0-6, 6-12, and 0-12 wk. ANCOVA was used. Conclusions were: both a slow-jog and a fast-jog regimen improved cardiovascular fitness; there was no difference between the slow-jog and fast-jog programs as to cardiovascular fitness; more cardiovascular improvement was made during the 1st 6 wk, and jogging programs of 12 wk., fast or slow, do not affect body wt.

7. McGEE, Newman E. *An analysis of the administrative practices in intercollegiate athletics in member colleges of the Arkansas Intercollegiate Athletic Conference.* Ed.D. in Physical Education, 1972. 124 p. (G. C. Moore)

An 84-item questionnaire determined the athletic practices in the Arkansas Intercollegiate Conference in: administration and organization, coaching personnel, student participation, regulation of contests, finance, transportation, publicity, and facilities. The AD, head football coach, and head basketball coach at each of the 11 AIC colleges were interviewed and surveyed. Conclusions: the most common type of dept. leadership was a combination PE teacher and AD; a majority of the coaches hold the master's degree in PE; coaches generally receive the same type of contract, tenure rights, salary rank, and faculty rank as regular faculty; head coaches also teach PE classes; the athletic program is funded from the general school budget with gate receipts going into the general school budget; publicity is handled by the school administrative office.

8. NEAL, Willard I. *The prediction of physical work capacity from an analysis of selected blood chemistry measures and body weight.* Ed.D. in Physical Education, 1972. 136 p. (G. C. Moore)

Five criterion measures of physical work capacity were obtained from a step-wise bicycle ergometer test with a 170 PR cutoff: work capacity, time; work capacity per kg. body wt.; VO_2; and VO_2 per kg. body wt. Thirteen resting, postabsorptive, blood chemistry measures were determined. Ss (N=31) were male college students. Step-wise multiple regression was utilized to form predictive equations for each of the 5 criterion measures. Reduced model equations were selected using as a criterion those variables which combined to form the lowest standard error of the estimate. The equation with the highest R^2 (.699) and lowest standard error of the estimate (10.5%) was found with the criterion of physical work capacity at 170 PR per kg. body wt.: PWC 170/kg = 13.074 − .146 (wt.) − .796 (white blood count) + .579 (bicarbonate ion) + .017 (cholesterol).

9. WILLIAMS, Daniel D. *Instruction stressing physical fitness compared with instruction stressing skill acquisition upon self concept in Caucasian and Negro students.* Ed.D. in Physical Education, 1972. 157 p. (G. C. Moore)

Two programs were compared as to the effect on self-concept. One stressed the acquisition of sport skills and knowledge and the other stressed physical fitness, strength, and the development of physique. Separate studies were conducted for college students and for JHS and SHS. The Tennessee Self Concept Scale was administered before and after the 12-wk. program. College Ss (N=114) were male fresh. (Caucasian and Negro) enrolled at Lincoln Univ. (Mo.) divided into sports program (N=69) and fitness program (N=65). There was a control group (N=21) of fresh. not enrolled in PE. For the SHS study, the Ss (N=23) were male Negro students divided into 2 exp. programs. Conclusions were that the 2 programs were not different in their effect on self-concept in either SHS or college populations. There were no differences between races.

Boston University, Boston, Massachusetts (R. Rohrbacher)

10. ASHLEY, Edd. *The development and evaluation of a comprehensive health education program for elementary schools.* Ed.D. in Physical Education, 1972. 239 p. (C. Willgoose)

A 22-unit comprehensive health curriculum guide was developed and inservice programs were administered to 128 teachers of the exp. community. Teachers then presented the health topics to 2843 students. A community similar to the exp. community was selected as a control and inservice programs were administered to 133 teachers. These teachers then presented the health topic units from their own 10 unit comprehensive health curriculum to 2944 students. The study was evaluated by determining what effect the HE program of the exp. community had on the attitudes and knowledge of E.L.E. students in the areas of alcohol, drugs, and tobacco. The Ashley Health Inventories were developed and used for this purpose. Results showed the health program of the exp. community was more effective in producing higher attitude and knowledge scores in the areas of alcohol, drugs, and tobacco at the 3rd through 6th grade levels.

11. BASH, M. Ronald. *A study of the effect of varsity college basketball participation on the self-concept of players on selected teams.* Ed.D. in Physical Education, 1972. 175 p. (A. G. Miller)

Varsity college basketball players (N = 139) were selected from the Eastern College Athletic Conference. The study compared the pretests, Players' Rank by Coach, and self-concept scores of the players to the posttest, Players' Rank by Coach, and self-concept scores. Time period was 14 wk. Data were collected from game statistics for tabulation into a Basketball Evaluative Instrument which objectively determined a player's contribution to the team. Members of winning teams (69%) showed a more positive change in self-concept than did members of losing teams (55%). Overall, 62% of the 139 participants showed a positive increase in self-concept.

12. KELLY, Sister Irene U. *A survey and evaluation of physical education programs in Catholic elementary schools of New England, New York and New Jersey taught by the Sisters of Notre Dame.* Ed.M. in Physical Education, 1972. 199 p. (A. G. Miller)

13. SAYED, Alae-Eldin. *The effect of different conditioning programs on the performance of selected motor factors related to gymnastic performance.* Ed.D. in Physical Education, 1972. 225 p. (D. Pargman)

Ninth grade boys (N = 149) were assigned to 4 treatment groups (circuit training, wt. training, Swedish exercises, and no conditioning-control). The conditioning programs were administered during the 1st 10 min. of each of 20 PE class periods (3 times a wk. over 7 wk.). Activities for the rest of each class period consisted of volleyball, wrestling, and street hockey. ANOVA revealed within group improvements and differences among the groups. There was no change in cumulative performance and no difference in cumulative standard scores. The post "no conditioning" test revealed a decrease in pull-up performance.

14. SEETHARAMEN, Arumbavur. *Peter V. Karpovich, M.D.: His life and contributions to physical education.* Ed.D. in Physical Education, 1972. 335 p. (A. G. Miller)

15. WETMORE, Reagh. *The influence of outward bound school experience on the self-concept of adolescent boys.* Ed.D. in Physical Education, 1972. 187 p. (A. G. Miller)

Boys (N = 291) aged 15.5 to 19.5 from various areas of the U.S. were accepted to the Hurricane Island Outward Bound School, Maine. All Ss were classified according to age, socioeconomic status, race, educational level, residential locale, sports background, and a specific course attended at the Outward Bound School. The course included rock climbing, survival swimming, ecology, first aid, sea expeditions, and rescue operations. The Tennessee Self-Concept Scale, the Kelly and Baer Behavior Rating Scale and Student Critiques were used as test instruments. *T* tests and a *r* matrix were used. Results showed a positive change in self-concept. The Outward Bound School experience appears to have been the factor influencing the change in self-concept. The intensity of positive change in self-concept decreased after Ss returned to their home environments. Changes in self-concept were not related to differences in age, socioeconomic status, educational level, race, residential locale, sports background, or specific course attended.

16. ZARDUS, Joan. *The effect of a relaxation training program on the development of badminton skills in college women.* Ed.D. in Physical Education, 1972. 165 p. (A. G. Miller)

17. CARROLL, Sylvia. *Significance of the role of health education in the emergence of the student's self-esteem.* M.S. in Health Education, 1972. 59 p. (E. T. Rathbone)

Two methods of teaching health were employed for a period of 3 mo. to measure the effect on students' self-esteem. The Relevant Teaching Method was used for group 1, an exp. group (N = 30); the Traditional Teaching Method was employed for group 2, a control group (N = 30). The Relevant Teaching Method presented various units of health where sex education (including family living and reproduction) was the focal point of instruction. The Traditional Teaching Method was the subject-oriented approach without any special emphasis on sexuality. The Self-Inventory Survey, adapted from Brownfain, was filled out by students twice, once prior to the exp. and again following the exp. On this test the lower the discrepancy score (difference between students' positive and negative selves' score), the higher the students' self-esteem. The results, $P = .001$ level, support the theoretical prediction that students taught by the Relevant Teaching Method have a higher self-esteem than students taught by Traditional Teaching Method.

California State University, Sacramento (D. R. Mohr)

18. ANDREOTTI, Davis R. *A history of cross-country running at Cordova Senior High School.* M.A. in Physical Education, 1972. 219 p. (H. H. Wolf)

This historical study traced the origin and development of the cross-country program at Cordova SHS in Rancho Cordova, California, from 1963 to 1970. Additional purposes were to analyze and relate factors relevant to the development, growth, and changes in the program. Data were gathered from past records of coaches and ADs, official athletic files, school and dept. records, rule books, yearbooks, scrapbooks, interviews with coaches, administrators and other personnel, books and related historical studies. It was found that the cross-country program has aided in meeting the objectives of PE, provided some evidence of carry-over of runners to the spring track program, utilized a systematic structured training and dietary schedule, and employed a training program based on motivational factors.

19. BAILEY, Ronald G. *A brief history of athletic training.* M.A. in Physical Education, 1972. 198 p. (H. H. Wolf)

The evolution of athletic training was traced from the early Greek period to the present time in the U.S., to project the future of the training profession and to supplement the small amount of historical material available. The majority of information was obtained from general histories of PE, athletics, and medicine. It was found that athletic trainers have existed from the beginning of organized sport. Their purpose has always been to aid the athlete; differences were in the variety of duties performed. In contrast to earlier times, today's athletic trainer is a professional who possesses a specialized college degree, often with advanced technical/medical training. Through the National Athletic Trainers Association, standardization of qualifications has emerged, a Code of Ethics has been formulated, and a certification program has upgraded the field.

20. BONALEWICZ, Richard M. *Effects of various lengths of practice periods on the learning of new motor skills.* M.A. in Physical Education, 1972. 89 p. (B. Bartee)

This exp. was conducted, using 50 male SHS fresh. who had little or no previous experience in badminton, at the Foothill SHS in Sacramento, California. It was hypothesized that there is no difference in the effectiveness of various lengths of practice periods when learning a new motor skill. It was discovered that the 5/8, decreasing, and the constant practice patterns were equally effective in teaching beginning HS players the high and low serve in badminton. It was also found that an increasing practice pattern was not as effective as the decreasing, constant, and 5/8 practice patterns when teaching beginning HS players to serve in badminton.

21. CARDEY, Charlotte E. *Six learning activity packages in beginning basketball for junior high school girls.* M.A. in Physical Education, 1972. 99 p. (B. Bartee)

Six basketball skills were selected, namely, pivot, jump ball, 2-hand set shot, 1-hand bank shot, lay-up, and "give and go." A task analysis was done on each skill, and learning activities based on the task analyses were selected to form the completed LAPS.

22. COWGILL, Cathy M. *Dance in the art of ancient civilizations.* M.A. in Physical Education, 1972. 282 p. (H. H. Wolf)

This study synthesized and interpreted pictures of art which depict dance of selected ancient civilizations covering the period of time from 2686 B.C. to 400 A.D. The civilizations investigated were Egypt, Crete, Mycenae, Greece, Eturia, and Rome. It was found that dance art presented a visual historical record of the existence of dance in each of the civilizations studied. These works of art provided insight into the nature of ancient dance, its meaning, participants, and beauty. Dance manifested itself in many of the beliefs and customs of ancient cultures, and this manifestation was recorded and preserved symbolically by the artists of the past.

23. DANG, Tri T. *A proposed course of study: Aikido.* M.A. in Physical Education, 1972. 132 p. (H. H. Wolf)

Aikido, a form of calisthenics and self-defense, has been adopted as a PE subject in many schools of California. This study presented a brief history of Martial Arts most popular in California (Judo, Karate, and Aikido), described the development of Aikido in California since 1954, and proposed a PE coeducational curriculum of Aikido for HS and college. The data were collected from periodicals, professional journals, proceedings of professional organizations, newspapers, pamphlets, and bulletins. Interviews were conducted with members of the California Aikido Federation and instructors in schools and colleges where Aikido was being taught.

24 FARIAS, Constance M. *A survey of current practices and attitudes of selected women physical educators toward substitute activities for the physical education requirement in California high schools.* M.A. in Physical Education, 1972. 84 p. (B. Bartee)

A questionnaire was sent in the spring of 1971 to the chairmen of the girls' PE depts. in SHS's in California. The 140 schools selected were from 3 geographical areas (north, central, south) and 3 enrollment categories (500-999, 1000-1999, 2000, and over.) It was discovered that activity substitution for required girls' PE was being allowed in some schools. Geographical differences existed with regard to number and kind of substitute activities. Some women physical educators opposed the substitution of activities for the PE requirement and most of them strongly opposed unlimited substitution. Where attitudes differed from practices only 17% of the schools had an outside force causing this difference.

25 JONES, Earl R. *The effect of anxiety and need for achievement on the performance of high school wrestlers.* M.A. in Physical Education, 1972. 106 p. (B. Bartee)

Data were obtained from The Thematic Apperception Test, The Test Anxiety Questionnaire, expectancy ratings by the individuals and by their coaches. Performance data were obtained from match scorebooks and observation. It was concluded that the personality traits of anxiety and need for achievement had a tendency to influence both the expectancy and the actual performances of these HS wrestlers. Ss who measured low in anxiety level performed better than those high in anxiety. The group scoring highest in performance was that of low anxiety and high need for achievement. The lowest level of performance was demonstrated by the group high in anxiety and low in need for achievement

26. KORGE, Manfred B. *The history and development of boys' school soccer in the Sacramento, California area from 1914 to 1972.* M.A. in Physical Education, 1972. 184 p. (H. H. Wolf)

Special attention was given to examine the reasons for starting and stopping the early program from 1914 to 1931 and the beginning of the modern program in 1966. Data were obtained by interviewing people who were involved in the phases of the development of the program. Also, minutes of league meetings, scrapbooks, personal files, correspondence, newspaper accounts, and related literature were examined. It was discovered that the program was discontinued in 1931 because of changing priorities in the city REC Dept., the depression, and the growing interest in American football. The soccer program was again introduced in 1966 because of the rising interest among the students in the community.

27 KRISIAK, Stephen A. *A chronological comparison of intercollegiate wrestling rules from 1950 to 1971.* M.A. in Physical Education, 1972. 283 p. (H. H. Wolf)

Besides the chronological comparison, other purposes of the study were to give an evolutionary account of the major changes in wrestling rules over the past 21 yr., inform those involved with intercollegiate wrestling of the more recent major rule changes and the probable reasons for them, and provide a reference for wrestling rules committees. It was concluded that intercollegiate wrestling has become a more technical and refined athletic event since 1950, rule changes have encouraged an aggressive type of wrestling that entices wrestlers to attempt to pin their opponents, and rules have been included that provide better safety precautions for wrestlers.

28. McCADE, Theodore H. *A history of men's intercollegiate gymnastics at Sacramento State College, 1959-1971.* M.A. in Physical Education, 1972. 224 p. (H. H. Wolf)

Data were obtained from resource material at the college, the interlibrary loan service, personal scrapbooks, personal files, minutes of the Far Western Conference, correspondence, and interviews with former participants and instructors. Prior to the introduction of gymnastics in intercollegiate competition, interest was developed through exhibitions performed as half-time entertainment at varsity basketball games and through class instruction. The caliber of the program has improved over the years. This has been due to the increase in number of colleges supporting gymnastics as an intercollegiate sport, improved gymnastic techniques, increased severity of judging, and improved equipment for the performance of routines.

29. RANKIN, John E. *An investigation of the effect of increased arm and shoulder strength on the basketball set shooting accuracy of ninth grade boys.* M.A. in Physical Education, 1972. 64 p. (I. Faria)

The Ss (N=54) were fresh. boys enrolled in PE classes at Del Oro SHS, Loomis, California. Group 1 participated simultaneously in a 6-wk. weight training program and periods of basket shooting practice. Group 2 practiced basket shooting for the same amount of time. Both exp. groups and a control group were tested for arm and shoulder strength with a cable tensiometer at the beginning of the 6 wk. and again at the end of the exp. Using ANCOVA, it was found that only exp. group 1 made gains in strength, $p < .01$. Exp. groups 1 and 2 were tested for set shooting accuracy at the beginning and end of the 6-wk. period. Neither group showed any significant improvement. It was concluded that an increase in arm and shoulder strength did not affect basket shooting accuracy.

30. SANCHEZ, John P. *Physical education and recreation as part of the inmate treatment program in the California state prisons.* M.A. in Physical Education, 1972. 87 p. (A. A. Bates)

A survey was made of the attitudes and practices of the superintendents and supervisors of REC in the California state prisons, concerning the utilization of PE as an integral part of the total inmate treatment program. It was found that several state prisons did not require inmate participation nor systematic physical fitness testing as part of the PE and REC program. There was an apparent lack of inmate involvement in the planning and management of the PE and REC programs and considerable divergence among the institutions as to whether supervision of the program should be a function of custody or classification and treatment. Support of the prison PE and REC program was primarily from Inmate Welfare Funds. A majority of prison PE and REC depts. were not organized as recommended by the Manual of Correctional Standards. Only 4 of 7 correctional officers utilized as REC assistants were qualified for this duty.

31. SHEPPARD, Roy W. *A brief history of varsity basketball at Highlands High School from 1958 through March 1971.* M.A. in Physical Education, 1972. 196 p. (H. H. Wolf)

This study traced the development of varsity basketball in the overall athletic program of Highlands SHS of Sacramento, California. It also related the factors relevant to its growth. Data were gathered from available minutes, records, and proceedings of the many groups involved with basketball, such as the CIF and coaches' organizations. Also included were materials from school yearbooks, local and school newspaper files, scorebooks, and the ADs' records.

32. SHIBATA, Yoshio. *The development of a manual for coaching the high school sprinter.* M.A. in Physical Education, 1972. 159 p. (A. A. Bates)

This manual was developed to conform with the best method of sprinting, based upon responses from championship sprinters and college track coaches, and from methods described in related literature. Data were obtained through questionnaires, interviews, and a careful analysis of literature.

33. SWEARINGEN, Roger K. *An analysis of the policies and practices related to extra compensation for extra services in selected high school districts in California.* M.A. in Physical Education, 1972. 117 p. (A. A. Bates)

Policies and practices were sought related to the use of extra compensation for extra service in conjunction with salary schedules and teacher assignments. Data were gathered from questionnaires and written policy statements submitted by the school districts. There was no correlation between the amount of extra service compensation and the number of hours required to perform these services. The rate of extra compensation was less than that stipulated for teachers in the regular salary schedule. Policies surveyed were inconsistent, in that all teachers performing similar duties were not compensated uniformly for performing like services under similar circumstances.

University of California, Los Angeles, California (G. Egstrom)

34. BROWN, Barbara Kay. *Play, privacy and psychological health.* M.S. in Physical Education, 1972. 140 p. (S. Arnold)

35. BRYANT, Susan Lee. *Anemia and physical performance of rats.* M.S. in Physical Education, 1972. (V. R. Edgerton)

36. DETTAMANTI, Dante Richard. *Functional lung capacities of swimmers before and after training.* M.S. in Physical Education, 1971. (G. Gardner)

37. EL-BAH, Khalifah Shebata. *The history of physical education, sports and recreation in the Libyan Arab Republic.* M.S. in Physical Education, 1971. (B. W. Miller)

38. FRAASCH, Forrest William. *History of the California Interscholastic Federation state track and field meets, 1915-1941.* M.S. in Physical Education, 1972. 216 p. (B. W. Miller)

39. GRIFFIN, Patrice Suzanne. *Kinesiological and physiological analysis of a modern dance routine.* M.S. in Physical Education, 1972. (L. E. Morehouse)

40 LAWSON, Richard Paul. *The effects of cooling and related warm-up on endurance work.* M.S. in Physical Education, 1972. (L. E. Morehouse)

41 MARLIANI, Lewis Allyn. *The effects of direct practice of stress on baseball teams' win-loss records during league play.* M.S. in Physical Education, 1972. 46 p. (R. A. Snyder)

42 PEDIGO, Paul Winfred. *Diagnosis of hopping task failure.* M.S. in Physical Education, 1971. (J. F. Keogh)

43 STRATTON, Brenda Diane. *A cultural analysis of legal provisions in physical education.* M.S. in Physical Education, 1971. (R. A. Snyder)

44 SUGDEN, David Alan. *Incidence and nature of motoric problems and related behaviors in kindergarten children.* M.S. in Physical Education, 1972. (J. F. Keogh)

45. WEINBERG, Robert Stephen. *An electromyographic study of anxiety and motor performance.* M.S. in Physical Education, 1972. 96 p. (V. V. Hunt)

University of California, Santa Barbara (V. Skubic)

46. AMUCHIE, Fidelis A. *Predictability of leg volume in college females.* M.A. in Ergonomics and Physical Education, 1971. 48 p. (E. Michael)
Seventy college females were used to predict leg volume using the segmetal method. The lower shank segment (calf to ankle) yielded the highest zero order *r* with the criterion leg volume. Lower shank, upper thigh, lower thigh, and top knee gave a multiple *r* of .94. Data on leg circumferences and heights, leg length, leg weights, and density were also reported.

47. BARNI, David A. *The effects of cold showers on performance.* M.A. in Ergonomics and Physical Education, 1971. 55 p. (E. Michael)
Ten male Ss training in endurance running were tested on a treadmill to obtain max. VO_2. Ss repeated 2 60% and 2 90% max. effort runs, both with and without shower applied during a 10-min. recovery period. With a 60% max. run the cold shower resulted in a lower HR. The cold shower had no effect on ventilation or VO_2.

48. BERGTHOLD, Lee. *Responses of selected civil service employees to a standard exercise test.* M.A. in Ergonomics and Physical Education, 1971. 44 p. (E. Michael)
Ss (N=81) 32 to 52 yr. of age were given a 3-min. step test in order to establish normative data for screening of Civil Service Employees. When HR, body wt., ventilation rate and body wt. were correlated, the results indicated that the wt. factor was related only to ventilation and not to HR

49. LOCKWOOD, Constance. *Mobility of the hip following hip arthroplasty.* M.A. in Ergonomics and Physical Education, 1971. 93 p. (M. M. Flint)

50. CONNORS, Shirley. *Evaluation of running form in high school girls: A cinematograph study.* M.A. in Ergonomics and Physical Education, 1971. 39 p. (M. M. Flint)

51. MONTGOMERY, Robert Bruce. *Performance consequent to ice pack and rest recovery treatments.* M.A. in Ergonomics and Physical Education, 1972. 88 p. (R. H. Rochelle)

52. McCAFFERTY, William. *Comparison between standing and walking recovery from treadmill exercise.* M.A. in Ergonomics and Physical Education, 1971. 71 p. (E. Michael)
Twenty males and 20 females were tested twice with standing recovery and walking recovery following a treadmill run of 5 mph for 10 min. Results indicated that recovery VO_2 measurements from moderate to heavy exercise differ with different recovery types only in the alactic payoff portion of recovery and that lactic payoff is similar regardless of the type of recovery. The HR recovery is mainly influenced by the type and intensity of the exercise.

53. MEIERS, John C. *The relationship between sixteen personality factors of university first string and reserve varsity athletes.* M.A. in Ergonomics and Physical Education, 1971. 65 p. (E. Michael)
The Cattell 16 PF was given to 110 varsity athletes participating in 7 different sports. Results indicated that reserve athletes were more outgoing and warmhearted than first string athletes. Specific differences were reported for athletes in swimming, volleyball, water polo, wrestling, and track.

54. PARK, Melvin William. *Minute by minute changes in work efficiency.* M.A. in Ergonomics and Physical Education, 1972. 49 p. (V. Katch)
College males (N=14) were tested on a bicycle ergometer on 5 occasions to see if changes occur in efficiency during submax. work, of different durations. Continuous VO_2 determinations were made and efficiencies calculated using a recovery baseline. The O_2 debt increased in the 1st 3 tests, then increased, contrary to what was expected.

Central Michigan University, Mt. Pleasant, Michigan (E. E. Way)

55. SOCHOR, Thomas L. *A comparative study between two selected groups of tumblers on selected tests of kinesthesis.* M.A., 1972. 48 p. (D. Kizer)
A study of beginning and advanced level tumblers. A battery of kinesthesis tests were given. The highly skilled were not superior to beginning tumblers in unique tests of kinesthesis. It appears that kinesthesis is not a major sense factor in tumbling.

Central Missouri State University, Warrensburg, Missouri (M. E. Lyon)

56. BLACKWOOD, Nancy Sue. *A comparison of an aluminum softball bat and a wooden softball bat as measured by batting power.* M.S. in Physical Education, 1972. 31 p. (M. J. Barnes)
College women (N=40), experienced softball players, were given 20 trials on the Davis Batting Tee Test using an aluminum bat and 20 trials using a wooden bat. Matched pairs of softball bats were used. The type of bat used did not have an effect on batting tee test scores.

57. GRECHUS, Marilyn L. *The effect of videotape feedback on a selected skill in gymnastics.* M.S. in Physical Education, 1972. 47 p. (M. J. Barnes)
A control group (N=28) and an exp. group (N=33) consisting of college women enrolled in beginning gymnastics classes were taught a standing headspring from a rolled mat using identical teaching methods. They practiced the headspring 5 times daily during 11 class periods. On 7 of the practice days, each member of the exp. group watched 1 of her 5 headsprings on videotape. After 11 practice sessions 3 headsprings were videotaped for each S and 3 judges used these to rate the performances. A t test indicated that there was no difference between the 2 groups.

58. RAUH, Sharon Lynn. *Comparison of the open and closed hand positions used to execute the forearm pass in power volleyball.* Specialist Degree in Physical Education, 1972. 45 p. (M. J. Barnes)
Two groups (N=76 and 78) of college women beginning power volleyball players were taught the forearm pass, 1 group with the open hand and the other with the closed hand position. Scores on the Helmen Bump-to-Self Test indicated that there was no difference between the 2 hand positions.

Central Washington State College, Ellensburg, Washington (J. M. Pearson)

59. BROWN, Larry G. *A survey of the amount and techniques used in preparation for dual meet and/or tournament competition in high school wrestling.* M.Ed. in Physical Education, 1972. 53 p. (E. A. Irish)

60. CARNAHAN, Donaldson M. *A survey of the fifty states to determine design standards for the multiple-car method.* M.Ed. in Physical Education, 1972. 64 p. (E. A. Irish)
A survey of the supervisors of traffic safety education programs in the 50 states was conducted to determine the design standards or guidelines imposed upon school districts related to the construction of multiple-car facilities. Many states seem to be improving the pupil-teacher ratio through use of multiple-car methods of instruction. Texas and Minnesota have well-defined minimum standards for design. Georgia and Tennessee provided recommendations for size and program activities.

61. RIGGS, Don E. *The effects of physical education specialists on the attitudes of elementary school teachers.* M.Ed. in Physical Education, 1972. 89 p. (R. N. Irving)

62. WILKINS, Donald R. *The effects of weight change on muscular strength and cardiovascular endurance in high school wrestlers.* M.Ed. in Physical Education, 1972. 53 p. (J. M. Pearson)
Four cable-tension strength and 8 Cameron Heartometer measures were taken on 15 members of the 1970-71 Walla Walla HS varsity wrestling team to determine the effects of wt. change on muscular strength and cardiovascular endurance. ANOVA and Tukey HSD techniques were utilized to compare wrestlers grouped by composite groups, by % of wt. loss, and by similar body wt.; strength measures were obtained at 5 selected times with cardiovascular endurance measures being obtained at 3 selected

times. Improvement ($p < .05$) was found in cardiovascular endurance for the composite group of wrestlers and the wrestlers grouped by % of body wt. loss.

63. WILLARD, Sam J. *A comparison of the bank and rim shots and various combinations from selected shooting angles for college students.* M.Ed. in Physical Education, 1972. 35 p. (J. M. Pearson)

Teachers College, Columbia University, New York, New York (W. G. Anderson)

64. CONROY, Mary. *Curricular activities of the secondary school modern dance teacher.* Ed.D. in Dance and Physical Education, 1972. 169 p. (W. G. Anderson)

Bioprogrammatic data about teachers and their school dance programs, curricular activities, teaching methods, and % of time spent conducting activities was identified through mailed questionnaires, interviews, and observations of 25 L. A. teachers. Eighty-three activities and 61 teaching methods were identified by the teachers. Correlation analysis showed relationships between: the more private dance training a teacher has and the more curricular activities she conducts, the more private dance training a teacher has and the greater variety of teaching methods she uses, the more college credits in dance a teacher has and the more advanced level (beginning, intermediate, advanced) classes she teaches.

Teachers College, Columbia University, New York, New York (J. R. Higgins)

65. STADULIS, Robert E. *Coincidence-anticipation behavior of children.* Ed.D. in Physical Education, 1971. 138 p. (A. M. Gentile)

In many physical activities and sports, accurate interception of a moving object (as a ball) is required for success or proficiency. The interception of a moving object has been termed "coincidence-anticipation." This study investigated the ability of children (7, 9, and 11 yr. old) to respond accurately in a laboratory coincidence-anticipation task. The 4 exp. variables examined were age, sex, practice, and rate of speed of the stimulus object. The coincidence-anticipation task employed consisted of releasing a response key at the same time that a ball propelled down a chute intersected a designated position on the chute. Accuracy was the difference between the ball travel time and the child's estimation of the travel time. The data indicated that 11 yr. olds were more accurate than 9 or 7 yr. olds, but only at the 2 slow rates. However, 7 yr. olds were *most* accurate at the fastest rate when compared to the other rates.

Dalhousie University, Halifax, Nova Scotia (A. J. Young)

66. BEAZLEY, Richard P. *A health education curriculum guide for the junior high schools in Nova Scotia.* M.P.E. in Health Education, 1971. 186 p. (E. G. Belzer)

This study developed a HE curriculum guide for the JHS(s) in Nova Scotia. Theories of curriculum development and a conceptual approach were used to develop the curriculum guide. As well as conceptual components the guide includes examples of content, teaching methods, and evaluation procedures. It also contains extensive lists of sources from which audiovisual materials may be obtained.

67. McKENZIE, Thomas L. *Effects of various reinforcing contingencies on behaviors in a competitive swimming environment.* M.P.E. in Physical Education, 1972. 90 p. (B. S. Rushall)

This study viewed the effects of the application of operant psychology techniques in a sporting environment. At a practical level the study involved 3 exp. aimed at solving the problems of 2 coaches who were experiencing difficulties in controlling attendance, work rates, and specific inappropriate behaviors in a competitive swimming environment. A problem solving approach utilizing the rules of contingency management was employed to reach this end. The results of the 3 related but separate exp. demonstrated that the selected contingencies were effective in each case; that is, both attendance and work rates increased and the inappropriate behaviors were suppressed. Overall results suggested that operant techniques could be practical and effective solutions to many problems encountered in PE and coaching environments.

East Stroudsburg State College, East Stroudsburg, Pennsylvania (J. Felshin)

68. POLINSKI, J. Randolph. *The comparison of oxygen uptake and heart rate responses following selected programs of interval training.* M.Ed. in Health and Physical Education, 1972. 102 p. (H. Weber)

69. THATCHER, John R. *An analysis of three selected protective techniques for the knee.* M.Ed. in Health and Physical Education, 1972. 72 p. (A. L. Olson)

Ten college male students tested the lateral movement of their knees with the Klein Medio-Lateral Collateral Knee Ligament Testing Instrument before and after tape and brace applications. The students completed

2 series of treadmill exercises (5 and 10 min.) designed to place controlled stress on the protective techniques. The basketweave tape technique was more effective than the cross-hatch or the brace, although the brace used was also reasonably effective. The physical stress used reduced the effectiveness of all 3 techniques, although the reduction was less in the basketweave and brace. The cross-hatch strapping had very limited effect upon the amount of lateral motion in knees under any of the conditions.

70. VAN HOUSEN, Constance J. *A comparative study of passing interaction in relation to sociometric standing and perceived skill between male and female collegiate basketball players.* M.Ed. in Health and Physical Education, 1972. 58 p. (Jan Felshin)

Male and female varsity basketball players from 4 colleges were compared with reference to: sociometric standing, perceived skill, perceived skill and pass receptions, and sociometric standing and pass receptions. Sociometric choices, pass receptions, and minutes played were recorded for individual players on each of 8 teams during 2 actual games. Ss (N=8) were players on each team with the most playing time. Correlations were computed using Pearson Product-Moment Correlational Analysis, and coefficients were tested for differences between men and women. Six random group ANOVA problems were computed separately for the 1st and 2nd games to determine whether differences related to position and/or to sex. No differences were found between male and female players with reference to the variables studied except that in 1 game male players' passing interaction related inversely to sociometric standing. It was noted that female players assigned higher ratings on both sociometric standing and perceived skill. Position seemed to affect passing interaction in the same manner for men and women with guards receiving more passes than centers.

Eastern Illinois University, Charleston, Illinois (W. S. Lowell)

71. ATEN, Dennis W. *Cardiovascular responses to exercise in water.* M.S. in Physical Education, 1972. 32 p. (M. T. Woodall)

The Ss were 12 varsity baseball and 13 varsity football players. Each S was given a test that consisted [illegible] sprint and endurance running through H_2O at chest level for a total of 16 laps in a swimming pool 43 ft. wide. Ss used their arms and hands for assistance during 9 of the laps. HRs were determined at the completion of each lap throughout the test by means of a radio-telemetered EKG. CONCLUSIONS: HRs increase sufficiently during running in H_2O at chest level to have value in cardiovascular conditioning. Sprint and endurance H_2O running produce similar HRs. In H_2O, heavier Ss run faster than lighter Ss. Exercise HRs are higher when arms and hands are used to air in propulsion through the H_2O. Therapeutic H_2O exercise programs can be developed for athletes to aid in cardiovascular conditioning where wt.-bearing activities are contraindicated.

72. BERGSTROM, Robert Bruce. *A comparison of reaction times of high and low level fitness groups before, during and after treadmill exercise.* M.S. in Physical Education, 1972. 43 p. (M. T. Woodall)

Ss were classified as to high or low level phys. fit. on the bases of a P.F.I. determined from recovery HRs following a standardized treadmill run. Ss were given 16 RT trials in each of 5 different situations; at rest, while running at 2%, 6%, and 10% grades on the treadmill and in recovery from the run. Data was punched on IBM cards and computerized *t* tests were used to determine the significance of the diff. of RT means in all 5 situations, within the high level of phys. fit. group, within the low level of phys. fit. group, and between the high level of phys. fit. group and the low level of phys. fit. group. CONCLUSIONS: RT during exercise is slower than RT at rest. There is no diff. between RT before exercise and after exercise. The phys. fit. of an individual is a factor in maintaining a rapid RT during exercise.

73. DONNELLY, Joseph Edward. *A comparison of four methods of soccer throw-ins.* M.S. in Physical Education, 1972. 35 p. (W. F. Buckellew)

Ss (N=40) male nonsoccer players were divided into 4 groups to perform a different method of throw-in; i.e., stationary, run and stop, run and drag, and run and fall. Each S received instructions on how to perform the throw-in technique assigned to his group. The skill was practiced until the S became proficient. Each S was then given 10 throws at an area representing the 6-yd. area at the goal mouth. Any illegal throw or any throw not landing in the target area was repeated without penalty. The study indicated that the run and drag and the run and fall methods of soccer throw-in are superior in obtaining distance to the other two methods. The run and stop is superior to the stationary method.

74. HANKINS, D. Sue. *A comparative study of the role of women and sport in England and Mexico.* M.S. in Education, 1972. 106 p. (W. S. Lowell)

In both England and Mexico sport and physical activity have played an important part in societal and cultural growth. In England, the major force has been from the people; in Mexico, the impetus has been from the government. The general philosophy of English women seems to be that of more active participation than their Mexican sisters. A common influence of both cultures was the importance of dance and the roles of importance given to women in the dance, even in the early cultures and societies. The struggle for progress in sports and games has been longer and more arduous for the women of Mexico. Both groups of women appear to have reached a new opportunity for a continuation of the expansion of their role in the sports, games, and leisure pursuits of the future.

75. **KLIPP, Kenneth Paul.** *Variability of cardiorespiratory responses to a standardized submaximal treadmill test on successive days.* M.S. in Physical Education, 1972. 54 p. (M. T. Woodall)

Ss (N=26) were chosen from 3 groups: Ss who had both previous running experience and lab./treadmill running exp., Ss who had previous running exp. but no prev. lab./treadmill exp., and Ss who had little prev. running exp. and no prev. lab./treadmill exp. The same submax. treadmill test was taken by each S on 3 different occasions during an 8-day period. Each testing session included an orientation, as well as the test itself. The test for the 2 groups with prev. running exp. consisted of running at 7 mph up a 4% grade for 7.5 min. The test for the group with little running exp. consisted of walking at 3.6 mph up a 4% grade for the first 3.5 min., and then running at 6 mph up the same grade for the last 4 min. HRs were measured by telemetry at rest and every 30 sec. during the test, beg. at 30 sec. until 3 min. into recovery. Pulmonary ventilation and O_2 consumption data were collected for 30 sec. at 3, 5, and 7 min. during the test. A *t* test was used. CONCLUSIONS: There is no variability of HR, pulmonary vent., and O_2 consumption responses to a submax. treadmill test on successive testing days; previous running and/or previous lab./treadmill exp. has no effect on this variability.

76. **WILDES, Bernita Helen.** *A study of health education in the public schools and community of Tomah, Wisconsin.* M.S. in Education, 1972. 52 p. (M. M. Daves)

ELE, JHS, and SHS teachers (N=152) were surveyed to determine the extent of HE offerings within the school system, the extent to which the schools use health resources in the community, and for suggestions for improving HE instruction at their level. Persons associated with health-related positions in the community were interviewed to ascertain the involvement of their agency with the school HE program. Results of the survey indicated that teachers felt HE should have a regularly scheduled place in the curriculum from K through SHS. The community surveyed provides an excellent health-care system. The medical services, paramedical facilities and personnel, cover most areas needed. Volunteer health agencies make important services available. Some agencies are not being utilized to the extent they might be. It is the responsibility of the school to impress upon students the availability of health-related resources in the community.

Florida State University, Tallahassee, Florida (P. W. Everett)

77. **BLUCKER, Judith Ann.** *A comparison of selected physiological parameters between exercising and nonexercising young and older women.* Ph.D. in Physical Education, 1972. 107 p. (P. W. Everett)

Young women (86) M age of 19 yr., and 82 older women, M age of 50 yr., were classified as exercising or nonexercising based upon the amount of their participation in weekly conditioning exercises. Two-way ANOVA revealed $p < .05$ between the young and older groups for all of the 6 variables tested in this study: physical activity level: caloric expenditure; physical activity level: WMR/BMR ratio; predicted max. VO_2; lean body mass; RT; and grip strength. Also found was $p < .05$ for the age-exercise interaction factor in: physical activity level: caloric expenditure, physical activity level: WMR/BMR ratio; and RT. The only $p < .05$ found between the exercising and nonexercising women was in RT. Multivariate general linear analyses of the total exercising and nonexercising groups (young and older) and of the young exercising and nonexercising groups revealed $p > .05$. A 3rd multivariate analysis indicated $p < .05$ between the older exercising and nonexercising groups. These results indicated that exercise has an influence on the RT and physical activity levels of women above the age of 50 yr.

78. **CHADWICK, Ida F.** *A comparison of the personality traits and kinesthetic augmentation and reduction of college female athletes and non-athletes.* Ph.D. in Physical Education, 1972. 179 p. (P. W. Everett)

Female team sports athletes (N=30) and 30 female nonathletes were administered the small-block and the large-block kinesthetic stimulation tests and forms A and B of the Cattel 16 Personality Factor Questionnaire. On the basis of scores obtained on the kinesthetic stimulation tests, Ss were categorized as augmenters, moderates, or reducers. The X^2 test for 2 independent samples revealed that the number of each of these perceptual types within each group was independent of classification as athlete or nonathlete. The scores obtained after each period of stimulation and the final average modulation scores revealed $p < .05$ between augmentation reduction tendencies of athletes and nonathletes. The athletes evidenced greater reduction. The personality scores revealed that the athletes scored lower than the nonathletes on factors B, I, M, Q_2, Q_3, and Q_4. The nonathletes obtained lower scores on factor Q_1. Correlation coefficients revealed that kinesthetic augmentation and reduction scores were related to personality factors A, B, M, F, Q_1, and Q_2.

79 COUTURIER, Hermel. *A survey of school principals' attitudes toward the community school concept in the province of New Brunswick, Canada.* M.S. in Recreation, 1972. 85 p. (H. C. Cannon)

A questionnaire was sent to 85 SHS principals and 155 JHS principals in the province of New Brunswick, Canada. There were 173 returned. The absolute and relative frequencies were computed for each of the variables on the questionnaire. A X^2 was applied to determine if the size of the community, the number of years as principal, and the mother tongue of the principals had any effect on the principals' answers. The number of years as principal was $p > .05$ in regard to their answers. The mother tongue of the principals was $p < .05$ on 10 answers while the size of the community was $p < .05$ on only 4 of the principals' answers. The majority of the principals were of the opinion that the school should provide a wide variety of programs for the total community and believed that school facilities and equipment should be made available for community use when not used for the regular school program. The community school program, according to the principals, should have fulltime leadership and should be administered by a board with representatives of the school, the city council, and lay citizens. The bulk of the community school program should be financed by the provincial government.

80 DARDEN, Ellington. *A comparison of body image and self-concept variables among various sport groups.* Ph.D. in Physical Education, 1972. 121 p. (P. W. Everett)

Both theory and research have agreed that the body image and self concept are important components of personality. Darden's body image discrepancy test and Secord and Jourard's body- and self-cathexis scales were administered at the beginning of the fall quarter, 1970, to the following sport groups at FSU: team sports—football (N = 65), basketball (N = 12), baseball (N = 26); individual sports—weight lifting (N = 15), swimming (N = 18), gymnastics (N = 9). Multiple discriminant analyses and univariate analyses indicated $p < .01$ among the team sports and individual sports, but not between the combined team sports and the combined individual sports. Also noted was $p < .01$ among the 6 sport groups for the body- and self-cathexis variables, but not for the body image variable. Of the groups tested, basketball players and gymnasts were found to be the most different from each other.

81 GAY, Robert Jerome. *The effects of an experimental training procedure for football players on the frequency and severity of knee and ankle injuries.* Ph.D. in Physical Education, 1972. 85 p. (P. W. Everett)

This study determined the effects of clockwise and counterclockwise running on a circular self-powered treadmill, with an adjustable slanted running surface, on the frequency and severity of knee and ankle injuries. Ss (N = 98) were members of the FSU varsity football team participating in the prespring football practice conditioning program. The exp. training procedure (N = 49) involved utilization of 2 treadmills, each designed to permit a gradual increase of stress on the medial and lateral ligaments of the knee and ankle throughout the full range of motion. The exp. training procedure consisted of running on the treadmills, both in a clockwise direction for 2.5 min. and in a counterclockwise direction for 2.5 min., 4 days the first week and twice a week for the remaining 4 wk. During spring practice, data were collected on the frequency and severity of knee and ankle injuries. Using the X^2 one-sample test, no differences ($p > .05$) were found for frequency of knee or ankle injuries. Injuries sustained by the control group (N = 49), however, were more severe ($p < .01$) for both knee and ankle injuries.

82 GENTRY, Roy B. *The effects of a nine-week aerobic jogging program on selected cardiovascular functions of young male college students through a time course evaluation procedure.* Ph.D. in Physical Education, 1972. 66 p. (R. J. Byrd)

Ss (N = 15) ranged in age from 18 to 22 yr. Pretests and posttests administered following the 3d, 6th, and 9th wk. were employed to evaluate the effects of the training program on resting and exercise cardiac output, cardiac index, SV, stroke index, O_2 pulse, HR, resting blood pressure, and plasma cholesterol. The data were evaluated by a single group repeated measures design (ANOVA) and Duncan's Multiple Range test. Results indicated $p < .05$ increases in resting cardiac output, resting and exercise SV, resting and exercise stroke index, resting and exercise O_2 pulse, and plasma cholesterol. Decreases ($p < .05$) were observed in resting diastolic blood pressure and steady state HR. The data demonstrated that the most significant changes in cardiovascular functions occurred early in the program through the 6th wk.

This was generally followed by a plateau or slight regression toward pretest scores. This trend indicated that further progression during the late stages of the program was not sufficient to elicit continued training effects.

83 **HILLS, William L., Jr.** *Designing and validating a submaximal test to predict the maximal oxygen uptake of seven-, eight-, nine-, and ten-year-old children.* Ph.D. in Physical Education, 1972. 72 p. (R. J. Byrd)

Ss (52 boys and 43 girls) were tested on duplicate measures of a submax. step text and max. VO_2. The work ergometer was a progressive step bench with an adjustable hand bar. The submax. test score (ST) used recovery HR as an index of cardiovascular efficiency. With the ST as the independent variable (X), and the higher max. VO_2 (ml/kg/min and l/min) as the dependent variable (Y), the regression equation was inadequate as a predictor. Multiple regressions using other independent variables were examined through a stepwise technique. Several significant regression equations were found. The most significant equation (R = .850, coefficient of determination = .722) for the total sample (N = 95) was one which incorporated the ST, ht., and wt. Using the M for each of these variables, it was possible to predict the max. VO_2 within ± .03 l/min ($p < .05$). With the exception of the ST, $p > .05$ was noted between boys and girls on anatomical or exercise response variables.

84 **JENNESS, Martin E.** *The effect of three levels of exercise and three levels of food intake on the biological aging rate of male adult albino rats.* Ph.D. in Physical Education, 1972. 83 p. (R. J. Byrd)

Sprague Dawley 180 day old male rats (N = 54) were assigned to 9 subgroups consisting of 3 food intake levels within each of 3 exercise levels. Exercise levels consisted of a cage activity group and moderate and severe exercise groups that were force exercised in specially designed "live-in" type drums at 24 and 48 ft/min, respectively, for 15 min. each day throughout a 120-day exp. period. Food intake levels were classified as ad libitum food consumption, moderately restricted food intake, and severely restricted food intake. Food allotments for rats in the food deprived subgroups were based on the average hourly food consumption of their ad libitum control groups minus the hourly quantity of food required to theoretically reduce their body fat stores by half (moderate restriction) or completely (severe restriction) during the exp. period. Aging rate was determined by measuring the strength of isometric contractions of rat tail tendons. No effect ($p > .05$) was observed due to exercise or to "exercise level-food intake level" interaction. However, values for the moderately restricted level were lower ($p < .01$) than either of the other food intake levels. As lower values are correlated with younger rats, these findings suggest that, as operationally defined, moderately food deprived rats age at a slower rate than rats on a severely restricted food intake schedule or those permitted to eat ad libitum.

85 **JONES, Billie J.** *The effects of fifty-three hours of continuous wakefulness on the performance of balance, strength, and psychomotor tasks by college females.* Ph.D. in Physical Education, 1972. 108 p. (P. W. Everett)

Ss were undergraduates. The exp. group (N = 10) remained awake for 53 continuous hours while control group (N = 10) followed their normal living routines. All Ss were tested at 12-hr. intervals beginning at 12:00 m. Friday and ending at 12:00 n. Sunday. Exp. Ss also took the tests at 6:00 a.m. Saturday and Sunday and at 6:00 p.m. Saturday. Seven parameters—static balance, static strength, aiming, auditory RT, wrist-finger speed, finger dexterity, and perception—were measured. ANOVA, an orthogonal polynomial equation, and Duncan's Multiple Range Test were used to analyze data. No differences ($p > .05$) were found between the Ms of the groups in terms of conditions. Differences ($p < .05$) were found within the Ms of the 2 groups in terms of trial progression for aiming (improvement), strength (deterioration), wrist-finger speed (improvement), finger dexterity (improvement), and perception (C group improved, E group deteriorated); within the Ms of the 2 groups in terms of interaction between trials and conditions for perception (C group improved, E group deteriorated); and within the Ms of the exp. group in terms of trial progression for aiming, perception, and RT (all deteriorated). Findings indicated that tasks requiring a short attention span were the least affected by the sleep loss condition.

86 **LARIVIERE, Georges.** *Comparison of the efficiency of six different patterns of intermittent ice hockey skating.* Ph.D. in Physical Education, 1972. 105 p. (P. W. Everett)

The 21 experienced ice hockey players used in this study were divided into 3 equal groups. An indirect open circuit, calorimetry system was used to measure max. VO_2 in the laboratory and VO_2 during the skating patterns. The skating patterns consisted of 60, 90, and 120-sec. skating periods with single or double-length time resting periods. Ss skated at 75% of their max. velocity, during the 20 min. the test lasted. The highest VO_2, 4.22 l/min (54.71 ml × kg/min.) was measured during the 120 × 120-sec.

skating and resting pattern. A difference of only 2% was found between treadmill max VO_2 and skating VO_2. Ice hockey players, doing intermittent skating at 75% of their max velocity get close to their max VO_2 after 2 min. of skating.

87 LLEWELLYN, Jack H. *Effects of two levels of overlearning on retention of a gross motor skill by institutionalized educable mental retardates and normal students.* Ph.D. in Physical Education, 1972. 144 p. (R. N. Singer)

The Ss (N = 61) EMR children with CA's of 12.0 to 15.10 (M = 14.09), 79 normals matched with the EMR's on CA (NCA) with CA's of 12.2 to 15.9 (M = 13.87), and 71 normals matched with the EMR's on mental age (NMA) with CA's from 6.1 to 12.2 (M = 9.53). EMR IQ scores were 1.5 to 3.5 SDs below the M on the Lorge Thorndike Intelligence Test. A stabilometer was used to measure a gross motor skill. The criterion score was 22 sec. on-balance in a 30-sec. trial. Retention was measured by absolute recall and savings score, with scores being recorded as seconds on-balance to .01 sec. and as number of trials required to reach the criterion. Each main group was divided into 3 subgroups, each of which received either 0, 50, or 100% overlearning. Retention scores were administered 2 min., 1 wk., or 1 mo. (depending on group placement), and 3 mo. after original learning. The results of two 2 × 3 × 3 × 4 factorial analyses with repeated measures on the last factor indicated that 100% overlearning was better than both 0 and 50% 2 min. after learning, but overlearning after this time was of no benefit to retention. The EMR's were superior to both the NCA's and the NMA's in savings score after 3 mo. EMR's were also superior to NMA's in savings score after 1 mo. In overall performance both the EMR's and NCA's performed at similar levels and both groups performed better than the NMA group.

88 NERON, Gilles Edouard. *The effect of dark and light colors on the precision of shots in ice hockey.* M.S. in Physical Education, 1972. 109 p. (R. N. Singer)

Accuracy was analyzed in terms of the perceptual discrimination of color as presented by the opposing goal-keeper's jersey or boards of different luminance. Ss (N = 24) were trichromat males from the Univ. of Montreal varsity team and were tested in an artificial situation and in a game situation. A *t* indicated $p < .05$ for accuracy in favor of shooting at a white board. In a game situation a *z* for independent proportions showed a $p < .05$ that the Montreal varsity team shot with greater accuracy toward a goal-keeper wearing a light uniform than a goal-keeper wearing a dark uniform.

89 SCHMOTTLACH, R. Neil. *An identification of current practices and educational priorities for the professional preparation of inner city physical education teachers.* Ph.D. in Physical Education, 1972. 253 p. (K. D. Miller)

Questionnaires were sent to 4 specific groups in the Midwest District of AAHPER: directors of student teaching and professional preparation in 21 leading college PE depts.; county and city directors of PE; inner city SHS principals; and inner city SHS PE teachers. The data revealed that few programs (4) were available for inner city PE teacher preparation. Increased knowledge of inner city children and the ability to set up and organize a varied PE program were considered important educational priorities. Courses in Urban Education and Sociology, Cultural Anthropology, and Communicative Development were recognized as being important academic considerations. Finally, the introduction of early practical experiences were considered important. All groups indicated the need for increased preteaching and student teaching experiences, visitation to community social agencies, and employment in inner city athletic and REC programs as vital practical experiences for the professional preparation of an inner city PE teacher.

90 SIEMANN, John William. *The effect of a jogging exercise training program on urinary catecholamine levels in untrained male subjects.* Ph.D. in Physical Education, 1972. 92 p. (P. W. Everett)

Ss (N = 11), untrained Air Force personnel assigned to the USAF Academy, ran 1.5 miles Mon. through Fri. for 8 consecutive wk. to measure changes associated with training in resting and postexercise urinary catecholamine levels. On Wed. morning and afternoon of each training week, the urine samples were obtained and subsequently analyzed for norepinephrine/vol., norepinephrine/100 mg. creatinine, epinephrine/vol., and epinephrine/100 mg. creatine content. A 2-factor repeated measures ANOVA yielded an *F* of $p < .01$ between the weekly resting and postexercise catecholamine levels in each reported variable. There were no differences ($p > .05$) observed between each variable in the weekly resting levels. However, a $p < .05$ decrease in both cases of norepinephrine output was noted from the 3d to the 8th postexercise training wk. Only when epinephrine was reported in per volume output was there a decrease noted in the weekly postexercise M output levels. It appears that exercise training may affect the sympathetic nervous system specifically in terms of norepinephrine output.

91. SWANSON, Robert James. *Cranial nerves of Macaca mulatta and Homo sapiens: A comparative study.* M.S. in Physical Education, 1972. 89 p. (O. M. Berringer)
The 12 pairs of cranial nerve roots were compared photographically. This analysis was expedited by means of superimposed tracings from each species. The comparison was made of individual pairs of nerve trunks at their point of superficial origin on the inferior surface of the brain and also compared were individual pairs of nerve trunks as they pass through the dura mater on the base of the skull with the brain removed. The rhesus monkey and man were found to be similar in the gross anatomy of the cranial nerve roots with the rhesus having proportionally broader origins and trunks. Differences were found in angle and width while similarity was demonstrated in the superficial origin of the nerve pairs.

92. WADLINGTON, Richard M. *A comparative study on the effectiveness of two grips for teaching beginning golf.* M.A. in Teaching, 1972. 51 p. (J. Schneider)
This study determined the effects of using the Vardon overlapping grip and the interlocking grip with respect to overall golfing ability with the 5 iron for beginning male golfers. The Vanderhoff 5 iron test was administered to each S. Two beginning golf classes were used in the study. Classes 40 min. in length were held twice weekly for 18 wk. The Ss were divided into a group which used the overlapping grip and another group which used interlocking grip. The findings showed the overlapping group had a M score of 6.72 and the interlocking group had a M score of 6.38. The results indicate that there is no difference between the effects of utilizing the 2 grips with respect to overall golfing ability with the 5 iron for beginning golfers.

93. WAGNER, David B. *A study of the validity of the National Collegiate Athletic Association's 1.600 prediction formula in determining the academic achievement of the student-athletes at the Florida State University.* Ph.D. in Physical Education, 1972. 114 p. (K. D. Miller)
This study compared the validity of the NCAA's 1.600 formula with similar formulas derived from a sample of nonathletes (N=435) and athletes (N=101) who had entered the Univ. as fresh. in the fall quarter, 1970, and had taken the SAT test prior to enrollment. The following conclusions were drawn: The NCAA 1.600 formulas are relatively weak predictors of the academic achievement of the nonathlete; A multiple regression equation derived from the sample of nonathletes is biased when used to predict grades for athletes; and the NCAA 1.600 formulas are reasonably valid predictors of the academic achievement of the athletes, even though these formulas will predict a grade .1 to .3 of a grade point under the grade actually achieved by a majority of the athletes.

94. WILSON, C. Larry. *The effects of individualized instruction in physical education upon physical fitness, motor ability and physical education knowledge of high-risk junior college freshmen.* Ph.D. in Physical Education, 1972. 86 p. (P. W. Everett)
Ss, 30 males and 30 females, were each subdivided into individualized instruction and nonindividualized instruction groups. The Ss were pretested and posttested during the 1st semester of the fresh. year for increases within and between groups. The Ss within the study were selected prior to enrollment in PE as marginal or high-risk students due to their poor academic achievement in SHS and from the results of certain tests administered during orientation week. The exp. was concluded upon completion of the foundations of PE course. The 3 areas tested were physical fitness, motor ability, and knowledge of PE. A *t* test indicated differences ($p < .05$) were established within groups in physical fitness, motor ability, and knowledge. The analysis indicated differences ($p < .05$) between individualized instruction increases and nonindividualized instruction increases in physical fitness and motor ability. Knowledge of PE improvement was $p < .10$.

University of Florida, Gainesville, Florida (O. J. Holyoak)

95. BRZEZINSKI, Francis Bernard. *The effects of weight training program on intercollegiate wrestlers.* M.A. in Physical Education, 1972. 78 p. (H. A. Lerch)

96. CAROLUS, W. Jaynee. *Attitude comparison of University of Florida freshman women before and after first quarter physical education.* M.A. in Physical Education, 1971. 42 p. (R. H. Alexander)

97. DETRA, Linda Sue. *A comparison of girls' swimming times at various ages using the freestyle tumble turn and open turn.* M.A. in Physical Education, 1971. 32 p. (C. W. Zauner)

98. GROTLISCH, Karen Jeane. *Professed self-concept changes in freshman women as related to physical education concepts at the University of Florida.* M.A. in Physical Education, 1971. 42 p. (R. H. Alexander)

99 MILTON, Mary Lucille. *Comparison of the effects of two training programs on trainable mental retardates.* M.A. in Physical Education, 1971. 53 p. (B. K. Stevens)

100 MUSSELMAN, Mary Horwedel. *Relationship of physical fitness to attitude toward physical education among freshman college women.* M.A. in Physical Education, 1971. 45 p. (R. H. Alexander)

101 NEWMAN, Gene Lewis. *Male participation in the intramural program at the University of Florida.* M.A. in Physical Education, 1971. 56 p. (R. E. Allen)

102 PAULDINE, Eugene E. *The effects of isometric exercise on blood composition.* M.A. in Physical Education, 1971. 50 p. (C. W. Zauner)

103 REDDING, Norman L., Jr. *Effects of two different weight training programs on strength increment.* M.A. in Physical Education, 1971. 32 p. (D. A. Kaufmann)

104 ROBINSON, Suzanne. *Perceptual-motor development and reading readiness of elementary school children.* M.A. in Physical Education, 1972. 75 p. (R. H. Alexander)

105 SEAVEN, Jarrett Paul. *A study of the personal constructs of an international distance runner using the repertory grid.* M.A. in Physical Education, 1972. 50 p. (H. A. Lerch)

106 WINZENREAD, Ruth Lynn. *A relationship of the physical education attitude, self-concept, and physical education background of female prison inmates.* M.A. in Physical Education, 1971. 64 p. (O. J. Holyoak)

George Williams College, Chicago, Illinois (B. L. Rothermel)

107 AUSTIN, Linda. *The effect of instruction on throwing for distance among girls.* M.S. in Physical Education, 1971. 20 p. (P. Healey)

108 LEAF, Carol. *Evaluation of four aquatic lifesaving rescue techniques.* M.S. in Physical Education, 1971. 32 p. (J. Joseph)

109 MARTINEK, Thomas. *A study of high school offensive basketball strategy.* M.S. in Physical Education, 1971. 40 p. (W. Bockwitz)

110 MITCHELL, Edward. *A suggested program of adapted physical education for Taft high school.* M.S. in Physical Education, 1971. 53 p. (H. Westerberg)

111 TIMM, Donald. *A survey of adult physical fitness in the Young Men's Christian Association of the U. S.* M.S. in Physical Education, 1971. 69 p. (J. Joseph)

112 VALAIKA, Philip. *The chronic complaints and ailments of male physical education teachers.* M.S. in Physical Education, 1971. 40 p. (J. Joseph)

113 BOBRICH, Melsa. *Reliability of an evaluative tool used to measure badminton skill.* M.S. in Physical Education, 1972. 19 p. (P. Healey)

114 REZNICEK, Wayne. *A motor ability test battery for intermediate grades.* M.S. in Physical Education, 1972. 48 p. (J. Joseph)

115 RIMKUNAS, Grazina. *Effect of an interval training program on learning tennis skills.* M.S. in Physical Education, 1972. 23 p. (J. Joseph)

116 TAIRA, Tsutomu. *The energy cost of pack carrying on the treadmill.* M.S. in Physical Education, 1972. 22 p. (J. Joseph)

117 WIGGINS, Harry. *Involving teachers in curriculum reconstruction: physical education Evanston school district 65.* M.S. in Physical Education, 1972. 87 p. (H. Westerberg)

118 LANGSTON, John. *Building strength through men's gymnastics classes.* M.S. in Health Education, 1971. 19 p. (J. Joseph)

119 KUESTER, Charles. *Ecological versus technological interpretations in health education.* M.S. in Health Education, 1972. 21 p. (P. Healey)

120 SZYMANSKI, Rita. *Use of variability scores in evaluating neuromuscular relaxation.* M.S. in Health Education, 1972. 28 p. (J. Norris)

University of Georgia, Athens, Georgia (R. T. Bowen, Jr.)

121 BOMAR, William McKinley, Jr. *The influence of noise pollution on the performances of motor skill tasks.* Ed.D. in Physical Education, 1972. 98 p. (R. T. Bowen, Jr.)
The influence of noise pollution on motor skill performance was investigated in terms of efficiency and quality of operation. Fresh. males (N = 30) at the Univ. of Georgia were the Ss. With and without noise pollution, the Ss performed a series of manipulative tests after reading the instructions for a period of 30 sec. Time required to complete the tests and number of errors recorded were higher under conditions of noise pollution. Noise pollution was found to be a deterrent to the learning of gross motor skill tasks.

122 COLBERT, Charles Cornelius. *A descriptive study of early life factors contributing to the development of professional baseball, basketball, and football players.* Ed.D. in Physical Education, 1972. 162 p. (R. T. Bowen, Jr.)
Early life factors contributing to the development of professional athletes were investigated using 190 professional baseball, basketball, and football players. Data were gathered using a structured interview technique. Factors considered were cultural heritage and background, socioeconomic status, educational achievement, parental and family influence; influence of coaches and others during early athletic careers, and influence of the mass media. Family size and its athletic background influenced success. Race, religion, and size and location of home town were related to each sport. The majority of the total group was from lower-middle class or lower class backgrounds. The athletes considered their coaches to have exerted little influence. The mass media had exerted much early influence. Educational achievement varied among the sports.

123 CONNER, Clyde Keith. *The influence of the Wesleyan Church upon recreational activities of its people and educational institutions.* Ed.D. in Physical Education, 1972. 364 p. (B. W. Gabrielsen)
The Wesleyan Church "Discipline," the doctrinal position of the Central Wesleyan College, and the opinions and attitudes of contemporary ministers of the Southern area of the Wesleyan Church were studied to determine their influence upon church members choices of REC activities, the PE and intercollegiate athletic programs of Central Wesleyan College, as well as the intramural and REC programs, and social life of college students. The findings supported the conclusion of a trend toward liberalization of church and college regulations, an expansion of REC programs, and a more permissive attitude by ministers of the church.

124 FANNING, W. Leroy. *The physiological effects of selected warm-up and varied rest intervals on the one mile run.* Ed.D. in Physical Education, 1972. 70 p. (R. T. Bowen, Jr.)
The physiological effects of warm-up and varying rest intervals following warm-up on the running performance of 33 trained endurance runners was investigated using M HR and M times for running 1 mile at max noncompetitive effort. Warm-up consisted of jogging 1 mile in 7 min. at a constant pace. HR was gathered by telemetry. Rest intervals were 1, 3, 6, and 12 min. Warm-up followed by both a 6- and 12-min. rest interval produced superior endurance performance when compared to other treatments. Warm-up followed by 1-min. rest was most detrimental to performance in time and physiological efficiency of cardiac output. Nonwarm-up produced superior performance to warm-up followed by a 1-min. rest.

125 FORD, Hayden Thomas, Jr. *A model for recreation program development by municipal governments in Alabama.* Ed.D. in Physical Education, 1972. 339 p. (R. T. Bowen, Jr.)
A model for REC program development was formulated by: an interview survey of fulltime Alabama REC executives to determine the status of municipal REC in Alabama; an interview survey to determine the executives views of a desired status which would enhance the municipalities ability to meet REC demands; and a seminar conducted by the Alabama Recreation and Park Society Board of Directors concerned with the formulation of the model. The model which was developed was evaluated by a panel of out-of-state REC experts and final revisions were made based on these evaluations.

126 GREER, Martha Judith. *Mary Ella Lunday Soule: Her career and contributions to health, physical, and recreation education.* Ed.D. in Physical Education, 1972. 295 p. (M. F. Vincent)

The study examined the role this woman played in developing PE for women at the University of Georgia between the years of 1925 and 1960. It assessed her life and work in the specific administrative area as well as in areas related to general and professional health, PE, and REC; it reported her specific and general contributions to professional educational associations; and it related her local and state civic endeavors. Original sources used were: Mrs. Soule's personal collection of papers, letters, articles, and photographs; questionnaires returned by associates, former staff members, former students, and personal friends; personal interviews with Mrs. Soule, her friends, and other prominent persons; Univ. of Georgia records and dept. files, and library and archival materials. This study made use of the findings by selecting the spheres of influence and organizing the facts and ideas accordingly: Mary Ella Lunday Soule—the person and her philosophy, her image to others; the initiator and innovator, her dedication to women and a great university, the professional, her service to educational organizations, and the Athens and world citizen.

127 GRIMSLEY, Jimmie Richard. *The effects of visual cueness and visual deprivation upon the acquisition and rate of learning of a balance skill among deaf individuals.* Ed.D. in Physical Education, 1972. 98 p. (R. T. Bowen, Jr.)

Normal-hearing, congenital deaf, and acquired deaf children were taught a balance skill on the dynabalometer. Each S was tested under conditions of: utilization of normal visual cues; utilization of supplemental visual cues, and absence of visual cues (blindfolded). Results indicated that normal-hearing children balance better than deaf children; deaf individuals learn the balance skill as well as normal hearing children as measured by the dynabalometer; there is no difference in performance or learning between congenital-deaf and acquired-deaf individuals; deprivation of visual input impairs balance performance; and supplemental visual cues significantly aid the deaf population especially the congenital deaf but do not help the normal hearing.

128 GUNN, Scout Lee. *A comparative study of selected personality traits in college students and their participation in selected outdoor recreational activities.* Ed.D. in Recreation, 1972. 126 p. (B. W. Gabrielsen)

Fresh. college students (N=215) were administered 2 tests: the ACL, a psychometric test, and the ORAI measuring participation in outdoor activities. Rates of participation and M scores for personality traits were derived through the use of correlations. Seven clusters of related activities and 3 clusters of related traits were identified through the use of the factor analysis clustering procedure. Canonical correlational analyses were used to determine the relationship between the activity variables and the trait variables. The conclusions were: meaningful clusters of REC activities are related to meaningful clusters of personality traits; and sex affects the relationship between personality traits and participation rates in REC activities.

129 HOLLAND, Robert H. *The origin and development of intercollegiate athletics through the Georgia High School Association.* Ed.D. in Physical Education, 1972. 307 p. (B. W. Gabrielsen)

A historical study was conducted to determine the early development, administration, and organization of interscholastic athletics in Georgia SHS, the function of the GHSA, the leadership facilities, financing, and structure of the GHSA; also to trace the history of each sport conducted by the Association and name the outstanding teams, coaches and players by sports. The conclusions are: athletics in Georgia have shown tremendous growth through the GHSA programs. In addition, public acceptance, improved facilities, better financing, and the outstanding leadership of the GHSA Executive Director was noted.

130 JOHNSON, Thomas Cole. *The effect of a season of intercollegiate soccer on selected components of physical fitness.* Ed.D. in Physical Education, 1972. 127 p. (M. F. Vincent)

The qualities of physical fitness measured were agility, cardiorespiratory endurance, muscular strength of legs, and running speed. The Ss were 16 members of the Emory Univ. varsity soccer team. Preseason practice and the competitive season lasted approximately 10 wks. The 1 group pretest-posttest design was used with the paired *t* test utilized to evaluate the differences between Ms. The relationship among the 12 cable tension measures of muscular strength was evaluated by the Kendall Coefficient of Concordance. Improvement was evident in all measures of physical fitness investigated but only the *t* value for cardiorespiratory endurance (energy expenditure for a standardized submax exercise bout on a bicycle ergometer) was significant ($p < .05$).

131 RABER, John Earl. *Perceived and actual levels and knowledge of cardiovascular fitness.* Ed.D. in Physical Education, 1972. 137 p. (M. F. Vincent)

The study among jr. and sr. male and female PE majors involved 3 major areas: perceived analyses of personal level of cardiovascular fitness by self rating and comparison of perceived analyses with factual analyses by administration of a test of cardiovascular fitness; perceived analyses of present knowledge of cardiovascular fitness and comparison of perceived with factual analyses by administration of a validated written examination, and the writing and validation of a written knowledge test of the principles of exercise therapy as regards cardiovascular fitness. The validation of the written test was accomplished by use of a panel of 5 authorities in the field of cardiovascular fitness. The analysis of data by ANOVA using a 2 × 2 × 2 factorial design supported the H_0 at the .05 level that no difference existed in any of the areas of study except that a difference existed among perceived and actual knowledge of cardiovascular fitness for females and males.

132. REYNOLDS, James Arden. *Student evaluation of the high school physical education program.* Ed.D. in Physical Education, 1972. 135 p. (R. T. Bowen, Jr.)

LaPorte's "Health and Physical Education Score Card Number II" was adapted to provide an instrument which SHS students could use to evaluate the SHS PE program. Vocabulary and phrasing were modified to increase understanding by this group. The revised instrument was compared to the original by a panel of 10 prominent SHS PE teachers and suggested modifications were incorporated. Matched pairs of Ss in 3 schools used the revised score card to evaluate their PE program. No differences were found between the scores of the matched paired S evaluators in any of the 3 schools. The results indicated that students can effectively use the student oriented score card to objectively evaluate their PE program.

133. STONER, Jan C. *The effect of two levels of pre-task exercise upon the performance of a gross motor task by educable mentally retarded children.* Ed.D. in Physical Education, 1972. 73 p. (R. T. Bowen, Jr.)

The effect an exercise bout on bicycle ergometer had on subsequent performance on a stabilometer of EMR children was investigated. Ss (N = 90) formed 3 groups—group 1 rode a ½ max effort for 2 min., at a rate of 1 RPS, group 2 rode a ¾ max effort; and group 3 did not exercise. Each performed ten 20-sec. trials on the stabilometer. On the 2nd day no exercise was performed prior to performance of 5 additional trials. No differences were found between group performance. The learning curve for all groups was linear. Significant interaction was shown for group scores on trials 1-10 (day 1); however, trials 11-15 (day 2) showed no interaction suggesting the exercise on day 1 effected performance. The exercise bout, however, was not demanding enough to affect either performance or learning.

134. TURNER, Kenneth Everett. *Attitudes of junior college presidents and athletic directors concerning the intercollegiate athletic program.* Ed.D. in Physical Education, 1972. 121 p. (R. T. Bowen, Jr.)

An attitude survey instrument was designed to determine the attitudes of jr. college presidents and AD's concerning policies, practices, objectives, and principles of the intercollegiate athletic program in the nation's 2-year colleges. A stratified sample of the 2 groups (N = 146 per group) were sent the instrument. Replies were received from 68%. The 2 groups agreed on finance and budget, student representation, eligibility, length of season, use of facilities, coaching supplements, and physical examinations for athletes. They disagreed on national competition and the position of the AD in the college table of organization. Within group differences were large concerning female participation on noncontact sports teams and whether NJCAA eligibility regulations are clear and easily understood.

135. WILLIAMS, Wilbert Curtis. *The relationship of race and socio-economic status to motor ability and athletic skill in elementary school children.* Ed.D. in Physical Education, 1972. 148 p. (R. T. Bowen, Jr.)

Two racial groups (N = 150) of 3rd grade boys (CA = 7.5 to 8.5) were formed using matched pairs based on socioeconomic status and rank order placement on the Peabody Picture Vocabulary Test. Subgroups were composed of upper, middle, and lower class. Motor ability and athletic skill were determined by the Georgia Adaptation-Children's Physical Development Scale and an Athletic Skill Survey (50-yd. dash, shuttle run, 400-yd. run-walk, and vertical jump). Blacks were superior to whites on motor ability scores at each socioeconomic level. High socioeconomic level produced higher motor ability scores for blacks. Blacks exceeded whites on 3 of 4 items on the ASS. Whites excelled on the shuttle run. Differences between socioeconomic classes were found in the vertical jump and the 400-yd. run-walk.

136. WISE, Michael Stephen. *Recreation skill levels and participation habits of male college seniors as compared to personal variables.* Ed.D. in Recreation, 1972. 184 p. (B. W. Gabrielsen)

College male SRs (N = 259) were studied as to REC habits in selected activities, data on skill level, amounts of participation, where and when activities were learned. These factors were compared to personal variables of the S. The conclusions were: the skill level was low, outdoor REC activities were most popular; most activities were learned outside of the school situation; students M social status was upper middle. Many students had no experience in some of the popular REC activities; there appeared to be a lack of opportunity to participate. Many of those studied ranked low on the REC quotient.

Microcard (D. J. Cotten)

137. **HUTCHINSON, Vann Q.** *The effects of audience and anxiety level on performance and learning of a complex, gross motor skill by college women.* M.S.T. in Physical Education, 1972. 92 p. (D. J. Cotten)

Based on combined scores of the Social Avoidance and Distress Scale and the Fear of Negative Evaluation Scales, Female fresh. (N = 144) in 4 distinct state anxiety levels were chosen for study. Within each anxiety level, Ss learned in 1 of 3 social environments: male audience, female audience, or experimenter only. The results indicated that performance was affected more by a male audience than by a female audience. In addition, the presence of the male experimenter tended to increase anxiety in female Ss. Once the skill was learned, however, performance was not affected by the type of social environment (audience or no audience). The amount of learning (measured by the percent-of-possible-gain formula) which occurred during the practice period was facilitated by the audience conditions in the high anxiety group. Learning scores of the 3 low anxiety groups were not affected by audience conditions. The type of audience, whether male or female, did not appear to affect learning by the female subjects.

Microcard

138. **PURCELL, John Kenneth.** *Validation of ten methods for determining a Representative reaction time score.* M.S.T. in Physical Education, 1972. 78 p. (D. J. Cotten)

This study determined which of 10 selected RT scoring methods is most effective in obtaining a representative RT score. A secondary purpose was to study the effects of several days practice on RT scores. Female college students (N = 25) were given 50 simple RT trials during each of 10 daily test sessions (weekends excluded). After a 1-mo. interval of no practice 4 additional 50 trial sessions were held to test retention of practice effects. Ten representative RT scoring methods were examined for validity and reliability. Validity was determined using a validity criterion designed for the study. Results indicated that a scoring method utilizing the mean of trials 16-30 was superior to other methods tested. RT scores were found to improve with practice for 6 to 8 days at the beginning of testing.

George Peabody College for Teachers, Nashville, Tennessee (J. M. Graves)

139. **MACBETH, Jon.** *The effects of interval and continuous step training on attitudes, cardiovascular fitness, and tennis skills of beginning tennis students.* Ed.D. in Physical Education, 1972. 79 p. (H. L. Garrett)

The effects of 2 step training programs, 1 a continuous and the other an interval step training program, upon attitudes toward PE, cardiovascular fitness, and tennis skills of beginning tennis students were compared by ANOVA with $p < .05$. Students (N = 65) were placed into 2 exp. groups and 1 control group, with the exp. groups receiving 10-min. training sessions twice a week for 10 wk. Participation in the step training programs did not affect students' attitudes toward PE or tennis skills. The programs were successful in bringing about increases in cardiovascular fitness of Ss.

University of Idaho, Moscow, Idaho (G. H. Porter)

140. **BROSTROM, Paul E.** *Types of running programs and their effect on body weight and body composition in rats.* M.S. in Physical Education, 1972. 34 p. (G. H. Porter)

Fifty-four, 35 day old, male Sprague-Dawley rats were divided into a control and 3 forced exercise groups. The 3 types of forced treadmill training were short continuous (SC), long continuous (LC), and interval (I) running. The exp. period lasted for 10 wk., and all 3 forced exercise groups ran 3 day/wk. Specific gravity was determined by underwater weighing and % of body fat by Soxhlet techniques. Data indicated that the control group had a significantly higher M body wt. and a lower, but not significantly lower, specific gravity value than did the exercised groups. No significant difference in % of body fat was found between the SC and the control group, or between the SC and the I group. The I group was significantly lower in % body fat than the control group. The % body fat of the LC group was lower than that of any other group. Exercise was effective in reduction of body wt., and a program of LC running produced the greatest reduction in % body fat.

141. **DOUGLAS, Richard.** *The effect of a season of cross country training on selected physical performance measures.* M.S. in Physical Education, 1972. 51 p. (G. H. Porter)

Ss (N = 15) from the Univ. of Idaho cross-country squad were randomly divided into a control and exp. group. The Ss were tested on 3 occasions at 5-wk. intervals throughout the competitive season. Tests administered were treadmill max VO_2, 440 yd. run, 3 mi. run, and selected strength measures. In addition to regular training sessions for all Ss, the exp. group was required to participate in a supplemental endurance wt. training program. The results indicated that there were increases in max VO_2, 3 mi. run performance, and total strength in both groups. These improvements occurred during the 1st 5 wk. of the season. The supplemental endurance wt. training program had no significant effect on distance running performance. A highly significant r was found between max VO_2 ml/kg/min and 3 mi. run performance. Distance running performance was not related to either the 440 yd. performance or a composite of selected strength measures.

142 LePERE, Charles B. *Cardiovascular and metabolic response of skilled and recreational college age swimmers to running and swimming.* Ed.D., 1972. 134 p. (G. H. Porter)
A treadmill running test, 2 tethered swimming tests, and a free swimming test were administered to 14 varsity (V) and 15 REC swimmers. The max VO_2 of the 14 V swimmers was not different than that of the REC swimmers during treadmill running. In all 3 swimming tests the max VO_2 of the V swimmers was significantly greater than that of the REC swimmers. The M max VO_2 of the V swimmers during free swimming was 8% lower swimming than running. The M max VO_2 of the R swimmers was 17% lower swimming than running. The max HR of both groups was lower swimming compared to running. Data obtained from the free swim test procedure indicated that VO_2 was linearly related to swimming velocity for both groups. However, for a common velocity within the range measured, the VO_2 of the REC swimmers was greater than that of the V swimmers. At the same HR during free swimming, the REC swimmers had a M VO_2 lower than that of the V swimmers. However the VO_2 in % of max was the same for the V and REC swimmers at a given HR.

Indiana University, Bloomington, Indiana (J. M. Cooper)

143 AINLEY, Kenneth L. *An instrument for self-appraisal of health and safety practices in private recreational vehicle parks and campgrounds.* H.S.D., 1972. 188 p. (B. L. Loft)
The development of a reliable and objective instrument for self-appraisal of health and safety practices in private REC vehicle parks and campgrounds was undertaken. Subproblems were: determination of content of the self-appraisal instrument, incorporation of standards into instrument forms, and validation of the instrument for reliability and objectivity. The reliability for the total instrument was .97. The objectivity coefficients for the total instrument .9928 for day 1 and .9941 for day 2. The instrument was found to be valid and reliable having a high degree of objectivity and use of the instrument would appear to have desirable application throughout the U.S.

144 ALEXANDER, Rex E. *Differences in factor patterns in tests of physical fitness, motor ability, and skill of men and women physical education majors.* P.E.D., 1972. 174 p. (C. Strong)
This study was to ascertain the structure and nature of the factors which contribute to motor performance. In particular, the difference in the clustering of the variables of motor performance between men and women majoring in PE was of concern. Ss (N = 105) female and (N = 115) male students were enrolled in professional PE at Murray State Univ. The oblique rotation procedure as well as 4 factor analysis models were used. A 34 item test battery was administered to each of the Ss. Solutions yielded 6 robust factors for the males and 5 robust factors for the females. The 6 robust factors that existed in the domain for the male group were leg strength and speed, arm and shoulder girdle strength and endurance, arm explosive strength for projecting objects, basketball skill, muscular strength and endurance, and grip strength and finger speed. The 5 that existed for the female group were muscular endurance and agility, leg power, upper body explosive strength for propelling objects, balance, and static strength of the arms.

145 BAKER, Willis. *The status of school health service programs in the Public Senior high schools of Indiana.* H.S.D., 1972. 188 p. (J. K. Rash)
This investigation was to ascertain the status and characteristics of school health service programs at the SHS level in Indiana. A health service checklist was constructed using as a base an instrument developed in 1960. Through review by a jury of health and educational professionals and the completion of a pilot study the checklist was developed. Data were collected from the total population of schools in Indiana which housed at least grades 10-12. The checklist [illegible] ailed to each of these schools and 348 of the 389 schools responded. It was determined that while [illegible] policies regarding school health service were present, only approximately one-half distributed these p[illegible] teachers. Nurses were employed in over 90% of the schools. Very few schools retained medical doc[illegible] psychologists, dentists, or dental hygienists. Policies and practices regarding first aid and emergency care were well implemented and accepted. Many SHS's fail to provide adequate health service programs. Of the 4 grade-level groupings of SHSs in Indiana those housing fewer grade levels presented more comprehensive health service programs.

146 BOWERS, Harold Nelson. *Health programs of member institutions of the Council for the Advancement of Small Colleges.* H.S.D., 1972. 129 p. (D. J. Ludwig)

The study was to determine the status and characteristics of the health program as found in member institutions of the Council for the Advancement of Small Colleges. A survey instrument was developed using *Recommended Standards and Practices for a College Health Program* developed by the American College Health Association. The instrument was divided into 4 areas: general information, health services, HE, and environmental health and safety. It was returned by 70 of the 113 members of CASC. The data were analyzed through the use of frequency tables, percentages, and descriptive statistics. The health programs of CASC reflected diversity in program development, scope activities, and methods of meeting health needs. The teachers in the colleges have failed to provide a comprehensive health program as established by the *Recommended Standards and Practices for a College Health Program.*

147 BOWLUS, Warren C. *An analysis of the vocational status of Indiana University varsity athletic letterwinners and non-letterwinners graduating between June, 1946 and June, 1965.* P.E.D., 1972. 175 p. (G. F. Cousins)

This study analyzed the vocational status of Indiana Univ. varsity athletic letterwinners and non-letterwinners who received B.S. degrees between June 1946 and June 1965. An attempt was made to find if there was a difference in the vocational status of highly successful athletes, and non-letterwinners using the following for analysis: income, income gain, securities owned, personal life insurance, market value of homes owned, graduate study, organization membership and officership, vocational positions held since graduation, % of vocational status attributed to the areas of college life, values attributed to having been acquired through participation in athletics. A questionnaire was sent to 1143 Ss who comprised the 3 groups. Differences were found between the groups in: annual income, income gain, and opinion concerning the % of vocational status attributed to the various areas of college life. Highly successful athletes had higher incomes and greater income gain followed by the athlete group and non-letterwinners, in that order. All groups claimed a greater vocational status from college course work but the athletes also rated intercollegiate athletic participation highly.

148 CARLSON, Ronald D. *Utilization of newer instructional media by professional physical education faculty in teaching undergraduate majors at Big Ten Universities.* P.E.D., 1972. 157 p. (J. B. Daugherty)

This study was to determine what factors influenced the utilization, or lack of utilization, of instructional media by faculty, using as factors attitude toward media, background factors, dissemination sources of media, sources of media information, use of media, future use of media, deterrents to its use, and skill and information competency of the faculty. Faculty (N=134) who taught in the skills, methods, and coaching curricular course areas were surveyed by questionnaire. The 9 categories were tabulated and descriptive analyses were used to report the findings. The faculty indicated a neutral attitude toward use of media. It was found that it is possible to identify those deterrents which hamper use of newer instructional media. Use appears to be limited and future use remote. The impression that training in media techniques tends to be related to a higher incidence of use and a positive attitude toward media, is not supported by the results of this study.

149 FAGNANI, Audrey Mae. *An evaluation of the doctoral program in Recreation and Park Administration at Indiana University.* Re.D., 1972. 275 p. (J. R. MacLean)

Examination of the educational background, professional background, and future plans of recipients of the Re.D. degree from Indiana Univ. was made. The study was done to ascertain opinions regarding the quality of educational experiences at Indiana Univ., opinions regarding the major requirements of the program and judgments related to acquisition of specific competencies. Recommendations were made for strengthening the program. Questionnaires were mailed to 56 doctoral recipients. The data were tabulated and arranged into frequency and percentage tables. It was found that those 35-45 yr. of age upon entry into the program completed the degree in less time than did those who were younger. The factor most influential in causing them to pursue the degree was the reputation of the dept. The majority of Ss were employed in large, public univ. or 4 yr. colleges. Competencies were considered relevant to present positions. Interaction with the major adviser was of great value to the Ss' professional development. An average of 33 mo. was needed to complete the dissertation project, one-third favored elimination of some research and statistics requirements. The faculty was the greatest strength of the program and the curriculum the greatest weakness. More preparation for college teaching was recommended. More faculty and flexibility in the program were also recommended.

150 FOSTER, Evie Gooch. Personality traits of highly skilled basketball and softball women athletes. P.E.D., 1972. 110 p. (E. Davies)

This study was to investigate the personality traits of highly skilled basketball and softball women athletes. A secondary purpose was to investigate the woman athlete's view of "self." Cattell's 16 Personality Factor Test and a personal data questionnaire was administered to Ss (N=103) highly skilled women athletes. Ss were tested prior to participation in a state regional or national level tournament. Data was treated using discriminant function analyses and ANOVA. Evidence indicated there is a relationship between personality and physical performance. No set of personality factors differentiates between basketball and softball sport environment groups. Variations in personality are found between successful and nonsuccessful women athletes, and between intercollegiate and nonintercollegiate women athletes. Sports participation does play a role in a woman athlete's view of "self" but this view is not dependent upon level of performance or performance category.

151. **GIRARDI**, George Junior. *A comparison of isokinetic exercises with isometric and isotonic exercises in the development of strength and endurance.* P.E.D., 1972. 139 p. (G. F. Cousins)
This investigation was undertaken to evaluate the effectiveness of isokinetic exercises and to compare the effectiveness of isokinetic exercises in the development of strength and endurance with isometric and isotonic exercises. Ss (N=92) fresh. and soph. boys were assigned to 1 of 3 exp. groups and 1 control group. The criterion measures were the vertical jump, chins, dips, right grip, left grip, back lift, leg lift, and 12-min. run-walk. The ANOVA for repeated measures was used to determine if change had occurred between pretest and posttest scores for the groups and the ANCOVA was used to test the different treatment effects upon the variance criterion measures. The isokinetic treatment group improved significantly in muscular endurance and strength. Isokinetic treatment was superior to control treatments in improving back strength, muscular endurance, power and circular-respiratory endurance.

152. **HERAUF**, James Anton. *An analysis of the methods used to teach health and safety education in selected secondary schools of Illinois.* H.S.D., 1972. 183 p. (D. J. Ludwig)
Methods being used to teach health and safety education (HSE) in the secondary school of Illinois were analyzed. The instrument was designed to gain information on the background of teachers, methods used, why methods are or are not used and what criteria teachers use to select methods. A sample of the secondary schools in Illinois small schools 0-499, medium 500-000, and large 1000+ were used. The survey instrument was sent to 210 teachers and 198 were returned. Findings were that teachers in secondary schools of Illinois use the traditional methods most. Failure to use certain methods is influenced by teachers' preparation. Limited sources of information are available. Criteria used for selection are not consistent with those indicated in the literature. Methodology used by small, medium, and large schools are the same.

153. **HESTER**, Hortense. *The effect of teaching aids on the performance of a selected tennis serve.* P.E.D., 1972. 80 p. (E. Davies)
This study was to determine the effect of the use of teaching aids on performing the tennis serve by beginning tennis players. A short racket, a tennis ball, and a combination of a tennis ball and a short racket were the teaching aids. The Ss (N=112) fresh. at Indiana Univ. were divided into 4 groups. The ANCOVA was used to determine the effectiveness of the teaching aids. Since there was interest in the improvement within each group, one-tailed tests were calculated. All groups made improvement in the performance of the tennis serve. There was no difference in the effects of the use of the teaching aids on the performance in the tennis serve. All 4 treatments were effective in teaching the tennis serve. There was no difference in the effectiveness of teaching the tennis serve with the use of a regular racket, short racket, practice of an overhand baseball throw, or a combination of practice of an overhand baseball throw and a short racket.

154. **HEY**, John Philip. *The effects of weight training upon the accuracy of basketball jump shooting.* P.E.D., 1972. 126 p. (A. T. Slater-Hammel)
This study was to investigate the effects of weight training (WT) upon the accuracy of jump shooting in basketball at long and short distances. Also the effects of WT upon shooting arm strength was included. Ss (N=40) were men with playing experience. After orientation and test for shooting accuracy at 12 and 18 ft. and strength of upper extremity, Ss were assigned to 4 treatment groups. During a 4-wk. period all Ss practiced 100 jump shots 5 days per week. Group 1 practiced jump shots at a distance of 12 ft., group 2 practiced at the same distance and trained with weights 3 days per week, group 3 shot jump shots at 18 ft., group 4 used the same distance and trained with weights 3 days per week. Tests given after the exp. period were identical to initial test. The $p < .05$ was used to reject hypotheses. WT had no effect upon jump shot accuracy. Practice at each distance resulted in improvement in accuracy. Improvement at 12 ft. was greater than at 18 ft. Improvement was specific to the practiced distance.

WT increased finger flexion strength, but improvements in other segments of the upper extremity were not significant.

155 **KOREN, Herman.** *An instrument for evaluating competencies of environmental health interns.* H.S.D., 1972. 143 p. (J. K. Rash)
This study was to develop an instrument with which to determine the degree of proficiency gained through experience in the multiple internship program by Indiana State Univ. environmental health students in essential professional work as an environmental health generalist. This was developed from the report of the "Proceedings of National Workshop on Environmental Health Education." Validity was based on the judgment of 2 juries of experts. Data were collected by use of the instrument and personal interviews with supervisors of the 35 students. Reliability was computed by Pearson Product Moment Correlation, the raw score formula and rank difference coefficient of *r*. The instrument was found to be valid and reliable and capable of differentiating between proficiency gained in the first internship, second internship, and practitioner status.

156 **KRUSE, William Lewis.** *Administrative policies and practices of intercollegiate athletics in Illinois two-year institutions.* P.E.D., 1972. 167 p. (C. Strong)
This study was to investigate current athletic policies and practices in administration of intercollegiate athletics in Illinois 2-yr. colleges. Data were collected in personal interviews of 34 ADs. Practices were assigned to selected areas of athletic control. Establishment of athletic policies was delegated to controlling groups. In over half of the colleges the governing board of athletics did not have written policies covering major areas. Student fees and annual appropriation from the general fund financed the intercollegiate athletic programs. Thirteen sports were offered and were coached by 231 coaches. The letter-of-intent was unpopular in 50%. Only 1 offered a full grant-in-aid to student athletes. There was no consistent pattern in the delegation of athletic control. ADs were not responsible for the development of aims, objectives, policies, and athletic philosophy. Written objectives underlying policies and practices in the administration of athletics was practically nonexistent in Illinois 2-yr. colleges.

157 **LOHR, Joseph Glenn.** *A descriptive analysis of health service programs in public community colleges in the United States.* H.S.D., 1972. 143 p. (D. J. Ludwig)
This study was to determine and describe the characteristics of health service programs at public community colleges in the U.S. Data were obtained from an Adaption of Kirk's *An Instrument For Evaluating College and University Health Services.* Percentages and frequencies were found for the responses to each question on the instrument and X^2 values were computed for 4 variables. It was discovered that community colleges rely heavily on community services for the health needs of their students. A minimum of campus organization and implementation of advisory, counseling, or educational services is evident. Non-fulltime students are receiving little health care through the college health service and only piecemeal follow-up of all medical examinations is evident. Less than half report students who are cared for as a result of drug abuse to police authorities or to parents or guardians. Community colleges have failed to identify the role health services can play in the total education process. Those holding membership in the American College Health Association provide more extensive health service programs than others. No clear lines of responsibility exist for the administration of health related activities.

158 **LOVETT, Walter L.** *The effects of an overhead training device on the performance of hurdlers.* P.E.D., 1972. 96 p. (G. E. Counsilman)
This investigation was to determine the effects of an overhead training device on timed performances of varsity HS hurdlers over a 50-yd. hurdle course and time spent from take-off to landing when crossing a barrier. Varsity HS hurdlers (N = 48) from 8 HSs in Newport News and Hampton, Va. were Ss. Factorial statistical arrangement, ANOVA, and the randomized block design were used. Duncan's New Multiple Range Test was used at the 1% level of confidence. No difference was found between the amount of improvement over the 50-yd. hurdle course or the hurdle flight velocity. Treatments differed at the 1% level of confidence for both. Differences among group treatment means existed for both the 50-yd. hurdle course and flight velocity.

159 **MARTIN, Terrell Owen, Jr.** *An analysis of the duties and problems of small college union directors with implications for professional preparation.* Re.D., 1972. 249 p. (R. Tully)
An attempt was made to determine if any implications for professions preparation could be identified for union directors. A checklist was developed and refined by a jury of experts. Union directors (N = 136) met the delimitations and responded. Data related to duties were analyzed and discussed. They were: frequency of performance, importance, difficulty, and reasons for difficulty of duties rated as considerable and of extreme difficulty. Problems encountered by directors were analyzed in terms of dimension and

difficulty ratings. Most duties listed were performed by 50% or more of the directors. With 1 exception the duties were judged to be of extreme, considerable, or moderate importance. With 1 exception duties were of moderate, some, or little or no difficulty to perform. Three problems considered to be major obstacles were: inadequate operating budget, inadequate facilities, and too many areas of responsibility. Duties performed and problems encountered were varied and often not of an administrative nature. Directors were judged sufficiently competent to perform their duties.

160. McCABE, Helen. *Analysis of outdoor recreation opportunities and needs on state owned lands in the State of Washington.* Re.D., 1972. 498 p. (J. R. MacLean)
This study was to classify and analyze available outdoor REC opportunities on state-owned lands outside of municipal limits (39 counties in Washington) and to make recommendations for development of same. Two survey questionnaires and 4 open-ended questions including 8 categories of 211 outdoor REC activities were developed. Available opportunities determined by 193 surveys were analyzed for the state's 39 counties. Dept. of Natural Resources and Game, and the State Park and Rec. Comm. showed greatest offerings on undeveloped and primitive areas. State Parks indicated greatest supervised opportunities. Developmental needs were for overnight camping (winter included), water oriented, varied trail, and sightseeing opportunities. Water resources were the primary attractions in 32 counties.

161. MEJILLANO, Evelina Adornado. *An instrument to determine the health misinformation of elementary school teachers.* H.S.D., 1972. 139 p. (J. K. Rash)
This study was conducted with the purpose of improving health teaching through improvement of health curricula in teacher preparation institutions and through in-service programs in HE. Procedure used was construction of a preliminary instrument and then administering it (form A and B) to ELE teachers from Indiana and the Philippines. This was followed by item analysis of results and refining the test. Findings were: reliability of form A was .91 and form B was .92 when the Spearman-Brown Formula was used. Of 225 items, 153 were deemed acceptable. Of 159 items of health misinformation, 148 was believed by 30% or more teachers. Indiana teachers having 6-10 yrs. of experience received the highest M score of 90; teachers having 11 or more yrs. experience received the lowest M score of 80. Philippine teachers having 11 yr. or more experience had the highest M score of 71; teachers having 3-5 yr. experience obtained the lowest M score of 62. The instrument, *Health Information Survey*, is found to be valid and reliable.

162. MORRIS, Harold Homer. *The effects of starting block length, angle, and position upon sprint performance.* P.E.D., 1972. 171 p. (A. T. Slater-Hammel)
This investigation considered the effects of variations in starting block (SB) position, front SB length, and front SB angle upon MT from the starting position and upon running time. The 3 SB variables, SB positions at 4 levels, front SB lengths at 2 levels, and front SB angles at 3 levels were arranged in a 4 × 2 × 3 factorial with repeated measures on 1 variable. Male undergrad. Ss (N = 40) were randomly assigned to 1 of 8 treatment groups. Each group practiced and was timed from a treatment condition that specified a single SB position and single front SB length. Ss practiced and were timed for each of the 3 front SB angles. Initial MT of the hands, starting time of each foot and running time across each of 4 equal segments of the 50-yd. dash were analyzed. Each criterion measure was subjected to ANOVA. Sprint performance was not affected by variations in SB position. Initial MT and starting time of the rear foot were affected by angle of the front SB. Front SB angles and lengths interacted to cause differentiating effects upon the starting time of the front foot and upon acceleration during initial segments of the dash. Advantage gained during acceleration due to the favorable effects of specific SB conditions was present at the end of the dash. Initial MT and the starting times of the foot are inadequate as measures of the effects of starting variables upon sprint performance. Runners accelerate to a point between 25 and 27.5 yd. from the starting line.

163. PRICE, Joseph Paul. *The place of public parks and recreation in Memphis, Tennessee, as perceived by members of the black and the white power structures.* Re.D., 1972. 154 p. (T. R. Deppe)
This study was to investigate and analyze the place of public parks and REC (PPRec) in Memphis, Tennessee as perceived by members of the black and white power structures; to determine if the provision for PPRec were perceived by members of the power structures as a major problem. Members of the power structures were identified by using 4 techniques: reputational, positional, postpositional, and economic dominant. A list of individuals were identified by each technique and their rank was compiled. A master list of the top 20 black and the top 20 white members of the power structure was compiled. The 12 most pressing issues were identified by a jury of experts and also were identified by key community informants and these were used to determine various relationships. The X^2 test of Independence was used to determine if the black influentials perceived PPRec differently than the white influentials. Members

of the power structures are aware of factors pertinent to the operations of the Memphis Park Comm. Attitudes of members of power structure were positive in nature. Black influentials ranked provision for PPRec 5th among the 12 issues while white influentials ranked it 12th among the 12 issues studied.

164 SEAMAN, Janet A. *The effects of a bowling program upon bowling skill number concepts and self esteem of mentally retarded children.* P.E.D., 1972. 110 p. (E. Davies)

This study was concerned with the effects of a 6-wk. bowling program upon bowling skill, number concepts, and self-esteem of mentally retarded children. Two groups (N = 22) moderately mentally retarded children ages 8 to 17 yr., 9 mo. were matched on CA and scores on a number skills test. Repeated measures were collected on bowling skill, number skills, ability to count bowling pins, and self-esteem. Both groups received treatment with the bowling instruction package, only the exp. group received treatment with the teaching aid. Repeated measures were analyzed to determine changes within each group. Posttest scores were analyzed to determine any differences in treatment effects. The exp. group improved in ability to count bowling pins standing and deduce pins knocked down. Both groups improved in basic number skills. Neither group improved significantly in bowling skills. The number-control group decreased in self-esteem. There were positive relationships found between all variables.

165 SMITH, Curtis Bruce. *An investigation of the psychological refractory period of athletes and non-athletes.* P.E.D., 1972. 94 p. (J. B. Daugherty)

This study was to investigate the psychological refractory period of athletes and nonathletes while the Ss were performing a large muscle movement. Jr. and sr. boys of Grayslake HS, Grayslake, Illinois were divided into 2 populations, boys who had earned a varsity letter (athletes) and boys who had not earned a varsity letter (nonathletes). Ss (N = 14) were selected at random from each group. They were tested 3 days on simple RT and 6 days on complex RT. RT measures were analyzed through the treatment of data within each population and the 1-way ANOVA design for the data between populations. There was no difference between the M RT of athletes and nonathletes on each of the 4 criterion measures. There was a difference between simple RT and complex RT, both 1st RT and 2nd RT. Psychological refractoriness is present in complex reactions. Fast simple and complex RT are not essential for successful competition in HS athletics.

166 TAYLOR, Paul. *The relationship among mechanical characteristics, running efficiency, and performance of varsity track men.* P.E.D., 1972. 99 p. (J. M. Cooper)

This study was an attempt to determine the relationship between efficiency (O_2 requirement) of running on a treadmill, performance score, and mechanical characteristics of the running stride. O_2 requirement for running 12 mph and 0% grade on a treadmill was determined for 20 Ss. Ss were photographed with a camera operating at 128 FPS and having a 1/1000 sec. exposure time. A mechanical analysis of the running stride was made from the exposed film. It was concluded that the interindividual variation in efficiency of running is greater than previously reported and is due in part to the difference in mechanics of running. Efficiency of running and running performance are multivariate in nature. For example, several physiological, psychological, mechanical, and morphological factors contribute to the running efficiency and performance of an individual.

167 TOENNIES, James Emil. *Effectiveness of selected treatments in a drug education program for university freshmen.* H.S.D., 1972. 116 p. (D. J. Ludwig)

An attempt was made to determine the relative effectiveness of 4 treatments in drug education instruction upon the behavior of fresh. at Wisconsin State Univ. at Whitewater. Ss (N = 50) were randomly assigned to each of the 4 treatment groups. Treatment 1 Ss received printed drug education material by mail on 3 different occasions. Ss in treatment 2 attended a 2-hr. drug education seminar. Ss in treatment 3 were enrolled in a 16-hr. drug education course. Treatment 4 (control) was Ss who had no contact with the investigator. The knowledge test results were analyzed by means of the ANOVA. The attitude survey questions were analyzed with the use of X^2. Findings indicate that prolonged drug education classes are no more effective in acquiring knowledge than presenting information in a 2-hr. discussion period. Ss believed that drug education programs and related services are highly desirable.

168 WELLS, John Charles. *Improving the health status of blind mentally retarded children through adapted physical education.* H.S.D., 1972. 59 p. (J. K. Rash)

This study was conducted to develop a program of adapted PE activities to improve the health status of 6 children enrolled in the Blind Project 70-23 of the Stone Belt Council for Retarded Children at Bloomington, Indiana. Each child received a medical exam (ME) and manual muscle (MM) exam. PE activities were selected to alleviate individual health problems found. Visits were made with parents in the home. Each child received a final ME and MM exam from the same individuals who conducted the initial exams. Final evaluation of the health status of the children was based on improvements noted on the final ME and MM exam. The health status of the 6 children improved. The amount of improvement was different in each. An unexpected leadership ability evolved in 3 of the 6 which permitted them to conduct the activity and calisthenic periods. Special techniques for children who are both blind and mentally retarded had to be utilized when conducting PE. Children prefer a limited number of activities within a fixed routine and continuity from an old activity to a new activity.

169. WILSON, William Charles. *An appraisal of comprehensive health planning competencies.* H.S.D., 1972. 117 p. (J. K. Rash)

This study was to develop a model that institutions involved in the preparation of comprehensive health planners might use as a guide for curriculum development at the graduate level. Information was obtained through a questionnaire sent to 52 state comprehensive health planning (CHP) agencies and 10 univ. which had conducted graduate CHP programs. Univ. were selected for having received grant support for curriculum development and training in CHP. Questions elicited the respondent's opinion concerning the relative importance of certain areas of knowledge, characteristics, and competencies for effective health planners. Conclusions were: required competencies should be problem solving in nature and required areas of knowledge should be in economics, public health, management science, political science, sociology, psychology. Essential characteristics should be: flexibility, judgment, intellectual capacity, foresight, creativity, dependability, self-motivation, accomplishment, sensitivity, diplomacy, self-conficence, self-control, positive attitude, human relations, personal qualities, development of others, leadership, self-development, drive, and accountability. Major weaknesses of CHP are management skills. Existing health planning curricula are qualitatively inadequate at the present.

170. WIRAG, J. Robert. *The role of the health educator in health service centers of selected colleges and universities.* H.S.D., 1972. 218 p. (J. K. Rash)

This study was to determine the role of the health educator through an evaluation of certain identifiable HE responsibilities within the health service centers as reported by the health service directors of selected colleges and universities according to certain institutional and health service characteristics. Procedures were correspondence with American College Health Association (ACHA) members to explore the feasibility and need for such a study, development of a survey instrument, determination of the status of HE within the health service centers, administration of the instrument to the total institution membership to the ACHA, and organization and analysis of the data received. Findings indicate 37 member institutions of the ACHA employed a fulltime and/or parttime professional health educator, of which the respondents from 18 considered either an MD or an RN as the professional health educator. A greater need was expressed for a parttime rather than fulltime professional health educator to be employed by the health service.

University of Iowa, Iowa City, Iowa (L. E. Smith)

171. COKER, Gordon E. *A survey of senior high school physical education programs for boys in selected Louisiana public schools.* Ph.D. in Physical Education, 1972. 236 p. (D. K. Leslie)

PE programs for boys in selected SHS were surveyed in Louisiana during 1969-70 in terms of professional preparation and background of teachers, teacher load, program content, and methods of instruction. Data were obtained from 65 public secondary schools in Louisiana during the 2nd semester of the 1969-70 school year. Data were obtained by means of questionnaire-interviews conducted with 75 teachers of PE and by observation of classes in progress. Data were analyzed in terms of percentages and Ms. PE programs for boys in public secondary schools of Louisiana have been improved during the past 14 yr. but still lack immediate and long-range planning. Teachers of PE for boys in public secondary schools of Louisiana have completed programs of professional preparation in PE in Louisiana colleges and univ. but fail to teach their PE classes effectively.

172. DRYSDALE, Sharon J. *A cinematographic and comparative analysis of the basketball jump shot.* Ph.D. in Physical Education, 1972. 205 p. (M. G. Fox)

The purpose of this study was to conduct a cinematographic and comparative analysis of selected mechanical aspects of the one-hand basketball jump shot, and selected physical attributes of the shooters, to investigate the factors that might distinguish skilled successful women shooters from unskilled unsuccessful shooters. Ten skilled and 10 unskilled jump shooters participated as Ss. Film analysis included computation of the ht. of the body's center of gravity from the floor at take-off, 10 frames after take-off, release, peak jump, and 2 frames preceding and following the estimated peak jump; horizontal, vertical and resultant velocity of the body at take-off, and of the ball at release; angle of take-off; and angle of ball release. Measures of age; wt., ht., shooting arm length; dynamic balance; finger flexion, elbow extension, wrist flexion, back, and leg strength; leg power; and hand size and span, were obtained for each S. A difference existed in the levels of performance for the skilled and the unskilled group, but the mechanical factors and physical attributes studied did not differentiate between the 2 groups.

173 FEIN, Judith T. *Effects of continuous and intermittent work on heat acclimation in women.* Ph.D. in Physical Education, 1972. 72 p. (N. P. Burke)

Ten members of a women's field hockey team were divided into 2 groups on the basis of their max VO_2. Ss walked either continuously or intermittently on a treadmill for a period of 100 min. daily for 8 days, at a workload which resulted in an average O_2 consumption of 34 ± 4% of max, under conditions of 49/26 °C db/wb. Determinations were made of M skin temp., rectal temp., HR, respiratory exchange, and energy metabolism, and sweat loss. Individuals in the intermittent group generally met the criteria for acclimation of reduced rectal temp., reduced M skin temp., subjective comfort and completion of assigned task, and with 1 exception, reduced HR. Individuals in the continuous group met the criteria of reduced HR, reduced M skin temp., and subjective comfort and completion of assigned task.

174 GORMAN, John B. *Physical education and athletics in the German Third Reich.* M.A. in Physical Education, 1971. 71 p. (L. E. Alley)

From 1933 through 1945, Germany was governed by the National Socialists who instituted a totalitarian state. A combination of conditions had given rise to Adolph Hitler's government. PE was required daily in the ELE. schools and physical characteristics were assessed as a part of entrance examinations and for promotion in secondary schools. As might be expected in the country of Jahn, Guts Muths, and Spiess, apparatus work was an important part of the PE curriculum. Track and field activities and games such as soccer were included in the program. A major change brought about during this time period was the development of Gelandesport (open terrain activities) as an element in the PE curriculum. Many sports leaders for the sports clubs and Kraft durch Freude received training at colleges for their particular vocation or had special training opportunities at 2 or 3 wk. conducted by the univ.

175 HARPER, Nama J. *An analysis of altered responses and their effects on final grades on multiple choice tests in the physical education skills program.* M.A. in Physical Education, 1972. 46 p. (M. G. Fox)

The data for this study were 429 answer sheets from the final exam of selected skills classes in the Dept. of PE for Women at the Univ. of Iowa. The changes in answers were categorized as R-W, a right answer changed to a wrong one; W-R, a wrong answer changed to a right one; W-W, a wrong answer changed to a wrong one; and X-X, an answer changed more than one time. The data were analyzed separately for the upper 27% and the lower 27% to determine if there was a difference in quality of change, final test grade before change and after change, and final test rank before and after change. The results indicated that there was no relationship among quality of changes. There was a relationship between final test scores and final test ranks indicating that it was more beneficial to alter initial responses for both the upper 27% and the lower 27%.

176 HOLMES, Janelle L. A. *A comparison of two different grading systems on the physical education performance of college women.* M.A. in Physical Education, 1972. 63 p. (M. G. Scott)

The Ss were Univ. of Iowa women who had completed the fitness section of movement principles classes and/or beginning bowling classes and who had the opportunity to register for the pass-fail option in these courses. Within the limitations of this study, the results of the data appeared to justify the following conclusions.

1. The performance of conventionally graded students was significantly superior to that of pass-fail students.
2. Conventionally graded students attended class with significantly more regularity than pass-fail students.
3. The pass-fail grading option was used more frequently in the prescribed area of study (fitness) as compared to an elective area of study (bowling).

177 JOHNSON, Glen O. *Effect of exercise and water deprivation on the morphology of the kidney of the rat.* Ph.D. in Physical Education, 1972. 232 p. (G. M. Asprey and C. M. Tipton)

The effects of exercise and water deprivation and rehydration on the morphological changes were investigated within the renal corpuscle and glomeruli of male albino rats and also the effect of exercise-and-water deprivation on the volume, osmolarity, and pH of the urine and the wet- and dry weights of selected tissues. The exercise group and the exercise-and-water-deprivation group completed a 9 wk. exercise program that consisted of running on a motor driven treadmill 6 days a week. The exercise-and-water-deprivation group and the water-deprivation group were deprived of water for 48 hr. each week for 8 consecutive weeks. Neither chronic periods of exercise nor water deprivation produced changes in the size of the renal corpuscles and glomeruli. The water content of the adrenal gland, testicle, kidney, and tibialis anterior muscle was not affected by chronic exercise combined with chronic deprivation and rehydration. Weekly periods of water deprivation followed by rehydration caused a significant increase in urinary volume and a decrease in the osmolarity of the urine produced by rats. Weekly periods of water deprivation followed by rehydration produced an enlargement of the adrenal gland of the rat.

178. PERNICE, Suzanne. *Film on foil fencing: Directing and judging.* Ph.D. in Physical Education, 1972. 73 p. (L. L. Scahill)
A color film was produced to aid students and teachers in recognizing common fencing actions which occur in a fencing bout and to provide practice in officiating such actions. The film was divided into 6 sections: section 1 defined and demonstrated fencing terminology and actions relating to officiating decisions; section 2 showed a model fencing strip with the placement of all officials and their specific duties; section 3 showed the action of 2 fencers demonstrating the most common fencing movements and the ensuing decisions as given by the director and 4 judges; section 4 allowed the viewer to practice officiating the bout; section 5 allowed the viewer to score the bout; and section 6 introduced the viewer to electrical equipment.

179. SHERMAN, Patricia A. *A selected battery of tennis skill tests.* Ph.D. in Physical Education, 1972. 179 p. (L. L. Scahill)
The final tennis battery which was constructed for this study consisted of 2 tests: the Untimed Consecutive Rally Test and the Service Test. The Untimed Consecutive Rally Test with a reliability of .88 and a validity coefficient of .60 was the best single estimate of tennis playing ability. The Service Test had a reliability of .75 and a validity coefficient of .44. The reliability of the battery was .92 and the validity coefficient was .62. The Ss for the study were 113 women undergraduates enrolled in beginning tennis classes at the Univ. of Iowa. A Subjective Service Rating Scale was also constructed. The interrater reliability of the 3 raters was .98, but the validity coefficient was .43.

180. SURBURG, Paul R. *Aging and effect of physical-mental practice upon acquisition and retention of a motor skill.* Ph.D. in Physical Education, 1972. 97 p. (G. M. Asprey and L. E. Smith)
The study involved the effectiveness of physical-mental practice upon the elderly in the acquisition and retention of a motor skill and its effect upon different age groups. Ss (N = 140) were from retirement homes in eastern Iowa. The Ss were divided into 2 age strata: 65 to 79 and 80 to 100. Seven types of group treatments were assigned to Ss in each of the age strata as follows: control, physical practice for 7 sessions, 1/2 physical practice for 7 sessions, physical and mental practice for 7 sessions, physical practice for 14 sessions, 1/2 physical practice for 14 sessions, and physical and mental practice for 14 sessions. Physical-mental practice was not superior to any of the other types of practice for either the younger or the older age stratum. The pursuit rotor performance of the younger age stratum was superior to the older group.

181. THOMPSON, Susan F. *The effects of water temperature and wet and dry body starts on swimming performance.* M.A. in Physical Education, 1972. 30 p. (M. G. Scott)
A questionnaire was administered to college women prior to their knowledge of the study to determine preconceived ideas concerning the effects of the variables on sprint swimming performance. Four subgroups were assigned to: warm water-dry start, warm water-wet start, cold water-dry start, and cold water-wet start. Within groups swimmers were paired for a simulated competitive experience. The data indicated that the condition of body start had no effects on swimming performance in sprint events in water of the 2 temp. used; neither was the water temp. an effect on the sprint swimming performance. The combination of body start and varied temp. did not effect the swimming performance of sprint distances. It was also indicated that for the total group the preference for the wet or dry state appeared to be an expression of attitude rather than a knowledge of previous performance.

182. WICHERN, Lynn J. *A concert of dance.* M.A. in Physical Education, 1972. 68 p. (M. Fox)
The purpose of this study was to demonstrate the ability to design a concert of dance, including group and solo works and to show a variety in subject matter, style of movement, and length of dances. This study in choreographic design involved creating 55 min. of original choreography; selection of accompaniment; teaching; rehearsing dances for performance; designing and supervising the making of scenery and props; designing and supervising costume construction and designing and supervising lighting effects. The concert of dance which was composed of 5 compositions designed to illustrate the scope of the choreographer's abilities was produced May 5, 6, and 7, 1972 at the University Theatre on the Univ. of Iowa campus.

183. **WINSOR**, Sister Lynn. *A programmed workbook in human anatomy specifically related to the bones, joints, and muscles of the leg.* M.A. in Physical Education, 1972. 136 p. (M. G. Fox)

A programmed instruction workbook was constructed using the branching or adaptive type of programming where the learner is moved frame by frame back and forth in the programmed instruction workbook according to his response. The workbook consists of 4 chapters: Anatomical Reference Terminology: Terms in Common Usage, Terms of Position; Osteology; Arthrology; and Myology. Each chapter was divided into information, question, and answer frames. Illustrations supplemented the frames and chapter tests were designed to evaluate learning.

Ithaca College, Ithaca, New York (W. F. Straub)

184. **ERICKSON**, Helen K. *The interrelationship among tests of cardiorespiratory fitness for eighth and ninth grade girls.* M.S. in Physical Education, 1972. 80 p. (C. J. Ansorge)

Girls (N = 30), 13 to 16 yr. of age, were given the AAHPER 600-yd. run-walk; Cooper 12-min. run walk, Skubic-Hodgkins Step Test, and Sjostrand PWC_{170}. The 4 tests were administered to each S over a 5-wk. period. Pearson test-retest reliabilities for each of the 4 cardiorespiratory tests were $(p < .05)$ with the exception of the Sjostrand PWC_{170}. Significant r's $(p < .05)$ were found between the AAHPER 600-yd. run-walk and the Cooper 12-min. run-walk, the AAHPER 600-yd. run-walk, and the Skubic-Hodgkins Step Test scores. A multiple regression equation with the Sjostrand PWC_{170} as the dependent variable and a combination of the other 3 tests under investigation was found to be of very low predictive value. The multiple R was $(p > .05)$.

185. **FURNESS**, Kenneth G. *The Furness penalty-kick test for soccer.* M.S. in Physical Education, 1972. 67 p. (W. F. Straub)

A test for penalty-kicking performance was developed for SHS boys, 14 to 16 yr. of age. The Ss (N = 78) were members of a Varsity soccer team (N = 21), J. V. soccer team (N = 22), and a randomly drawn group of nonsoccer players (N = 35). To make the test game-like, a regulation soccer goal (24 ft. × 8 ft.) was divided into 3 different scoring areas. Point values of 1, 2, and 3 were allocated to the 3 areas depending on their distance from the center of the goal. Test items consisted of accuracy and velocities measures. A Penalty Kick Index (PKI) was derived by multiplying the M velocity score of the 20 trials by the total accuracy point value. Validity of the test was established by utilizing deductive reasoning, divergent groups, and judges' ratings. Reliability of the test was established by the Intraclass R method. The 3 divergent groups differed significantly $(p < .05)$ in velocity and in PKI but not on accuracy. Velocity coefficients for Intraclass R were .95 for tester 1 and .93 for tester 2. The accuracy R for tester 1 and tester 2 were .31 and .28, respectively.

186. **PORRETTA**, David L. *Patellar tendon reflex time in black as compared to white college basketball players.* M.S. degree, 1972. 29 p. (C. A. Milesis)

Patellar tendon reflex time was determined for black (N = 26) and white (N = 29) basketball players ages 18-26, at 3 colleges and univ. and 1 jr. college. The latent time of the reflex was measured in msec. by use of an electronic counter. Ss sat blindfolded with arms folded at their chest prior to receiving a blow to the patellar tendon from a rubber hammer. Differences $(p < .05)$ were not found.

Kansas State University, Manhattan, Kansas (C. B. Corbin)

187. **ALBRIGHT**, Clyde. *Evaluation and establishment of norms in four health related areas of physical fitness for high school sophomores and juniors.* M.S. in Physical Education, 1972. 37 p. (C. B. Corbin)

188. **BALLARD**, Charles R. *The establishment of specific behavioral objectives for evaluative purposes in an elementary physical education program.* M.S. in Physical Education, 1972. 40 p. (K. McKinney)

189. **BARKER**, Rex G. *Spectator sportsmanship as related to various situations of emotional involvement.* M.S. in Physical Education, 1972. 51 p. (C. B. Corbin)

190. **DAHNKE**, Eugenia L. *The physical education teacher and tort.* M.S. in Physical Education, 1972. 60 p. (R. A. Wauthier)

191. **DUKELOW**, James. *Construction of a battery of scales to measure the attitude of college freshmen towards bigtime intercollegiate athletics.* M.S. in Physical Education, 1972. 76 p. (C. B. Corbin)

192. GIEBER, William J. *The history of football at Grants Pass High School.* M.S. in Physical Education, 1972. 50 p. (R. A. Wauthier)

193. KNIGHT, Dan J. *A survey of high school football programs in class C schools in the state of Nebraska.* M.S. in Physical Education, 1972. 32 p. (R. A. Wauthier)

194. KOHLMEIER, Marvin L. *A study of the mechanics of the jump shot in basketball.* M.S. in Physical Education, 1972. 29 p. (R. A. Wauthier)

195. LAWRENCE, David. *A study of the 1971-72 Big Eight Conference varsity basketball player's opinions concerning their workload while pursuing a college degree.* M.S. in Physical Education, 1972. 37 p. (C. B. Corbin)

196. MYERS, Jacob A. *The effects of jet lag on hand-eye coordination.* M.S. in Physical Education, 1972. 41 p. (C. B. Corbin)

197. NERY, Ronald D. *Legal liability for coaches of intercollegiate athletics.* M.S. in Physical Education, 1972. 57 p. (T. M. Evans)

198. RINGGENBERG, Archie C. *University and college physical education faculty schedules in relation to job responsibilities.* M.S. in Physical Education, 1972. 49 p. (T. M. Evans)

199. ROSE, Kirk A. *Evaluation and testing of health related fitness for an adult fitness class.* M.S. in Physical Education, 1972. 38 p. (C. B. Corbin)

200. SALAVANTIS, John E. *A comparison of body weight gain of a group in a weight training program compared to a group in a physical education class without a weight training program.* M.S. in Physical Education, 1972. 97 p. (R. A. Wauthier)

201. WAGNER, Bernadette R. *Spotting techniques for progressive tumbling in girls gymnastics.* M.S. in Physical Education, 1972. 42 p. (C. B. Corbin)

202. WHEATCROFT, James S. *The fundamentals of basketball to be taught to the elementary child.* M.S. in Physical Education, 1972. 33 p. (R. A. Wauthier)

203. WIELAND, Martia. *A comparative evaluation of the effectiveness of three conditioning programs.* M.S. in Physical Education, 1972. 47 p. (C. B. Corbin)

WILKINSON, Richard K. *An evaluative study on the effects of the 1972 football off-season weight training program on the strength development of the participants.* M.S. in Physical Education, 1972. 42 p. (T. M. Evans)

University of Kansas, Lawrence, Kansas (J. L. Pyfer)

205. KREBS, Susan C. *A comparative study of interval training in conditioning age-group competitive swimmers.* M.S. in Physical Education, 1972. 81 p. (W. Osness)

206. COHEN, Richard Burton. *The effects of ball handling activities on educable mentally retardates' motor ability.* M.S. in Physical Education, 1972. 77 p. (J. L. Pyfer)

207. EYLER, Nancy J. *Emotional and cardiac responses of different levels of competition of women collegiate volleyball players.* M.S. in Physical Education, 1972. 85 p. (W. Osness)

208. RUHL, Patricia L. *Changes in strength, flexibility, balance, movement time and dance technique occurring during University of Kansas gymnastics season.* M.S. in Physical Education, 1972. 182 p. (W. Osness)

209. LIBEER, Larry. *A study of policies and practices used in high school programs in the state of Kansas.* M.S. in Physical Education, 1972. 81 p. (W. Osness)

210. KARATUN (ret.), Ozdemir CDR. *Axis deviation of the heart on fit and unfit subjects and the possible effect of interval training.* M.S. in Physical Education, 1972. 88 p. (W. Osness)

211. COLBURN, Larry E. *A study of the reliability of mens gymnastic judging for college competition.* M.S. in Physical Education, 1972. 138 p. (W. Osness)

212. JOHNSON, Clay Doyl. *A study of football officiating in the Rocky Mountain Athletic Conference.* M.S. in Physical Education, 1972. 61 p. (W. Osness)

213. DIENELT, Douglas M. *An investigation of the relationship between distances running performance and predicted maximum oxygen intake.* M.S. in Physical Education, 1972. 74 p. (W. Osness)

Kent State University, Kent, Ohio (M. C. Resick)

214. DORRELL, Betty Jane. *A conceptual approach to a physical education curriculum for Lakeland Community College.* M.A. in Health and Physical Education, 1972. 126 p. (B. L. Seidel)

215. EISENMAN, Patricia Ann. *The correlation between body build and the mean electrical axis of the heart in the college aged female.* M.A. in Physical Education, 1972. 95 p. (L. Golding)

216. FLORENCE, Sheila M. *A study of the opinion of black and white male Kent State students regarding blacks in professional athletics.* M.A. in Physical Education, 1972. 90 p. (M. Malmisur)

217. HAAS, Judith Ann. *The effect of evaluative others upon performance of a complex motor task.* M.A. in Physical Education, 1972. 81 p. (G. Roberts)

218. HOPSON, Sandra Gail. *The socialization process of the black athlete.* M.A. in Physical Education, 1972. 76 p. (G. Roberts)

219. KIM, Jeung H. *The history of empty-hand combat in the orient and the development of the oriental martial arts in America.* M.A. in Physical Education, 1972. 155 p. (M. C. Resick)

220. KITCHEN, Betty. *Appraisal of program and administrative problems encountered in the conduct of girls extracurricular sport programs in Ohio high schools.* M.A. in Physical Education, 1972. 152 p. (B. Hartman)

221. PATTERSON, Juanita Ann. *Effect of augmented feedback on perception and acquisition of movement sense.* M.A. in Physical Education, 1972. 73 p. (F. Biles)

222. PUHL, Jacqueline L. *Application of liquid crystal thermography to exercise thermoregulation.* Ph.D. in Physical Education, 1972. 210 p. (L. Golding)

223. TAYLOR, Patricia J. *Influences of selected factors on women's track and field in the United States.* M.A. in Health and Physical Education, 1972. 122 p. (B. Seidel)

224. ZUTI, William B. *The effects of exercise and diet on body composition of adult women during weight reduction.* Ph.D. in Physical Education, 1972. 168 p. (L. Golding)

Louisiana State University, Baton Rouge, Louisiana (J. K. Nelson)

225. COLLINS, D. Ray. *Effects of ankle taping upon strength decrement and surface temperature of knee flexors and extensors in submaximal treadmill running.* Ed.D. in Physical Education, 1972. 133 p. (J. K. Nelson)

Male Ss (N = 60) performed 2 10-min. treadmill bouts (6 mph at a 10% grade) with ankles taped and untaped. Static strength tests of the knee flexors and extensors were administered before and after each run. Surface temp. measurements at 5 anatomical sites on the thigh and knee were also taken before and after exercise by an infrared thermometer. The results of the study indicated that ankle taping did not affect the amount of strength decrement in the knee flexors and extensors. There was some evidence that taping retarded the normal surface temp. elevation of the knee extensors. The differences in surface temp. elevations at other anatomical sites as a result of running with ankles taped and untaped were not significant. There was no relationship between surface temp. elevation and the amount of strength decrement of the knee flexors and extensors.

226. DANIELS, Alice D. *Pain tolerance and cardiac response to pain of low and high anxious subjects before and after exercise.* Ed.D. in Physical Education, 1972. 100 p. (H. E. Fant)
On the basis of scores on the Spielberger Trait Anxiety Scale a high anxious group of college women (N=20) and a low anxious group (N=20) were formed. The Ss were tested individually before and during exercise on the following measures: baseline HR, pain anticipatory HR, HR while pain was experienced, and pain tolerance. Pain was induced by pointed projections sewn inside a pressure cuff and placed around the arm. Pain tolerance was measured in mm Hg. The exercise measurements were taken while the S exercised on a bicycle ergometer at a steady state HR of between 120 and 130. HR measurements were taken by a biotachometer with telemetry. Both the anticipation of and the administration of pain produced increased HR of approximately the same magnitude while at rest and while exercising for both anxiety groups. No difference in pain tolerance between high and low anxious Ss was evidenced. Pain tolerance was not influenced by exercise. There was no significant relationship between pain anticipation HR and pain tolerance.

227. ELROD, Joe M. *The effects of perceptual-motor training and music on perceptual-motor development and behavior of educable mentally retarded children.* Ed.D. in Physical Education, 1972. 264 p. (H. E. Fant)
Educable mentally retarded children (N=30), 9-12 yr. of age, participated in the study. One group of 15 Ss participated in a sequential perceptual-motor program combined with a structured music program. The other group participated in the music program only. The case study technique was employed to describe and evaluate the Ss' experiences in the respective programs. Data included family and social background, medical, psychological, and educational records, the Purdue Perceptual-Motor Survey, a teacher rating scale and daily anecdotal records concerning classroom participation, social and emotional behavior, and personal health habits. The conclusions were that while the program of perceptual-motor activities combined with music brought about greater gains in perceptual-motor skills than the music program alone, both programs resulted in improvements in social and emotional behavior. It was further concluded that improved physical skills enhances self-concept.

228. SMITH, Theresa L. *The effect of coactors upon the motor performance of male and female subjects of different ages.* Ph.D. in Physical Education, 1972. 79 p. (M. L. Life)
Three age groups 8, 13, and 18, of 24 male and 24 female Ss in each group were tested on 2 gross motor tasks, 1 emphasizing accuracy and 1 emphasizing speed and accuracy. Each S performed the tasks in the presence of 3 coactors, 1 coactor, and no coactors. No spectators other than the examiner were present. A split-plot ANOVA was employed to analyze the data. No significant differences were found in accuracy performance due to the presence of coactors, however performances on the speed and accuracy task were improved with the presence of coactors. Older Ss performed better than younger Ss and males outperformed females under all conditions.

229. STOCKARD, Jerry R. *Effect of different levels of physical fatigue upon motor learning and subsequent motor performance.* Ed.D. in Physical Education, 1972. 77 p. (R. E. Steben)
Male college students (N=81) were assigned to 3 groups. One group (heavy fatigue) exercised on a bicycle ergometer until a HR of 180 was reached, then immediately began practicing a novel, vigorous gross motor task. Another group (moderate fatigue) exercised until a HR of 150 was obtained prior to practicing the motor task. A 3rd group (nonfatigue) began practicing at resting HR levels. The motor task involved running, kicking, throwing, and catching while traversing a triangular circuit. The learning phase consisted of 30 circuits. A week later all Ss performed the same task under each of the fatigue conditions. It was found that rate of learning was not significantly influenced by the prepractice state of fatigue. However, specificity of learning conditions and performance was evidenced which supported the hypothesis that vigorous sports should be practiced under the same fatigue conditions under which they are to be subsequently performed.

Mankato State College, Mankato, Minnesota (R. B. Moore)

230. BENNETT, Frederick H. *Personality profile comparisons of participation in three winter sports.* M.S. in Physical Education, 1971. 53 p. (R. E. Stadulis)
JHS boys (N=39) were given Cattel's Jr.-Sr. HS Personality Questionnaire after choosing to participate in 1 of 3 sports (basketball, hockey, or wrestling), or choosing not to participate. The Ss also were

tested after the close of the sport seasons. The results indicated: basketball players were significantly higher on factor G (expedient versus conscientious), the control group was significantly higher than basketball players on factor J (zestful versus circumspect individualism) and all Ss were significantly lower on factor I (tough versus tendermindedness) after the sport season.

231. DITTY, Thomas Francis. *Comparison of three methods of tagging-up from third base.* M.A. in Physical Education, 1972. 45 p. (R. E. Stadulis)
This study compared the RT, MT, and total times of 3 methods of tagging-up from 3rd base. The 3 methods tested were: visual, the player determines for himself when to start for home plate; visual command, the player starts for home plate upon receiving a visual signal from a coach; and verbal command, the player starts for home plate upon receiving a verbal signal from a coach. The Ss (N = 15) college jr. varsity baseball players. Each S was tested 3 times on each method and the order of testing was controlled by a Latin Square. The ANOVA and Tukey Tests indicated that the visual method was faster for RT, MT, and total times, than the visual command and verbal command methods. The visual command method resulted in faster RT, MT, and total times than the verbal command method.

232. GUPTA, Krishna M. *Status of physical education in the English speaking secondary schools in the province of Quebec.* M.S. in Physical Education, August, 1972. 66 p. (R. B. Moore)
A 5-page questionaire was formulated and submitted to the 80 English-speaking secondary schools of the Province of Quebec. The purpose was to determine the quality of the PE programs, including training of the instructors, organization, and administration of the programs, facilities and equipment, health and safety factors, testing programs and types of activities included. The survey indicated a need for better preparation of teachers and coaches, improvement of facilities, programs for handicapped children, homogeneous grouping, recording PE grades on students report cards, and inclusion of a greater variety of activities. However, a high percentage of the schools rated well in attention to testing, grading, health and safety, procuring PE books and journals, and budgeting for equipment.

233. HARTMAN, David Bill. *Personality characteristics of selected basketball coaches.* M.A. in Physical Education, 1972. 35 p. (R. E. Stadulis)
Cattell's 16 PF Questionnaire was completed by 57 basketball coaches at the Mankato State College Indian Coaching Clinic. The coaches were divided into 3 groups, depending on the number of years of head coaching experience: 0 yr., 1-3 yr., 5 yr., or more. M raw scores on each factor for each group were derived and statistically treated by ANOVA and the Schefe method. Only on factor M were the responses significantly different. The limited-experienced and experienced groups' responses exhibited a higher degree of internal anxiety and less concern for practical matters than the nonexperienced group. A comparison of the experienced group's responses with Cattell's norms for the general population at age 35 indicated differences in 6 of the 16 factors.

234. ODOM, Bentley Robert. *The effect of an eleven foot basket on basketball shooting accuracy.* M.A. in Physical Education, 1973. 49 p. (R. D. Gorman)
A group of college basketball players were divided into 2 groups by the use of pretest and random matched pair procedures. One group practiced and was tested on a 10-ft. basket and the other group practiced and was tested on an 11-ft. basket. The Ss were 20 college basketball players. Each S shot and was tested on his respective basket for a period of 4 wk. by the use of a skills test. A 2 × 4 factorial design was used to analyze the data with matching on the 1st factor and repeated measures on the 2nd. The ANOVA for a repeated measures design indicated that the 10-ft. group shot significantly better than the 11-ft. group.

235. ROHLOFF, Richard Edward. *The effect of selected stances in football upon linemen's reaction, movement and total time in three offensive charges.* M.S. in Physical Education, 1972. 54 p. (R. E. Stadulis)
This study determined the effect of the 3 and 4 point stances upon linemen's RT, MT, and total time in 3 offensive charges: charging straight ahead, pulling 90° to the right, and pulling 90° to the left. The 24 Ss, selected from 3 Mankato SHS(s), were randomly assigned to 1 of 6 groups in a Latin Square design that had each group perform the 6 treatments in a different random sequence. M scores for each treatment were derived and statistically treated by ANOVA and the Tukey Test. In terms of total time, pulling left from the 3-point stance was faster than from the 4-point stance. RT was faster from the 3 point stance for all movements, but essentially the opposite results were found for MT. It was recommended to use the 3-point stance because of its superiority in terms of RT and to drill on quickness of movement.

236 ZENK, Michael L. *The development of an instrument to measure shoulder dislocate flexibility.* M.S. in Physical Education, 1972. 38 p. (R. D. Gorman)
The study determined if dislocate distance as measured by the test instrument could be used as a measure of dislocate flexibility. Six variables were measured that were thought to affect the dislocate distance: age, grade, ht., wt., arm and shoulder spread, and shoulder width. A multiple *r* of these variables was produced by a Univac computer and it was found that little relationship existed between the 6 variables and the dislocate distance. Reliability and objectivity of the study were high. Validity of the test instrument was .92 as computed by the rank difference *r* method.

237 BALLINGHOFF, Louann J. *A comparison of selected personality factors of female secondary school varsity sports participants.* M.A. in Physical Education, 1972. 67 p. (B. F. Husman)
Women (N = 157) attending 15 SHSs represented 3 varsity sports groups: team sports (N = 81); individual sports (N = 49); and team and individual sports (N = 27). All Ss were 1st string varsity athletes with 2 years of SHS competition. The Cattell 16 PF Questionnaire revealed that the individual sport group scored significantly higher than the team sport group on factor I, Premsia, representing the traits of sensitivity and effeminacy. The individual competitors tended to be more kind, gently affected, imaginative in inner life and in conversation, hypochondriacal and anxious, attention seeking, and demanding. None of the other factors were different. An overall view of the test disclosed that more similarities than differences existed between the 3 groups.

238 BATTLE, Beverly L. *The views of selected Virginia educators toward sex education in the secondary schools.* M.A. in Health Education, 1972. 237 p. (M. A. Tifft)
The Schutt Sex Education Questionnaire was sent to 70 Virginia educators in the spring of 1971, with 61 (87.1%) responding. Over 90% of the respondents believed the public schools have a responsibility to teach sex education and supported the inclusion of such a program in their schools. Inadequate teacher preparation and fear of parental reaction were viewed as the most important reasons for not offering sex education in local schools. The majority agreed that sex education should include the teaching of attitudes and values. Over 90% of the respondents revealed opposition for "preaching at" students and supported "nonevasive" communication. Participants disapproved of offering the program on an after-school, noncredit basis. A slight majority favored excusing students whose parents opposed sex education. The majority believed the content should be comprehensive. Menopause, abortion, contraception, homosexuality, incest, and impotence and frigidity were among the topics approved for inclusion by three-fourths of the respondents.

239 CUMMINGS, Jane D. *Palmar Sweat Indices: Prior to and following the presentation of a film on childbirth.* M.A. in Health Education, 1972. 51 p. (M. A. Tifft)
Adults (N = 31), ranging in ages from 18-22 yr., were assigned to 3 groups. Each group had 2 pretest Palmar Sweat Indices (PSI) taken and was then exposed to 1 of 3 preparatory messages, designed to be (1) reassuring, (2) fear-arousing, or (3) neutral. Following the messages, Ss had 2 more PSI taken, and were then shown a childbirth film, followed by 2 more PSI. Ss did not respond emotionally as assessed by the PSI following the message presentation, but they did significantly respond following the childbirth film presentation. None of the messages proved effective in reducing the emotional impact of the film.

240 FITZGERALD, James W. *A comprehensive study of two personality dimensions in outstanding athletes and scholars.* M.A. in Physical Education, 1972. 95 p. (B. F. Husman)
Male soph., jr., and sr. univ. students (N = 127) were divided into 3 groups: the outstanding athlete group, which included players from football, baseball, wrestling, lacrosse, swimming, golf, and tennis; the outstanding scholar group (N = 38) with GPA between 3.8 and 4.0; and the control group (N = 42). The extraversion-introversion (E) and neuroticism-stability (N) dimensions of the Eysenck Personality Inventory were analyzed. A significant difference on the E scale was found between the athletes and scholars, and between the scholars and the control group. The athlete group and the control group were higher on the E dimension than the scholar group. No differences existed among any of the groups tested on the N dimension.

241 HENKE, Lorraine J. *On the perception of health problems of junior high school students.* M.A. in Health Education, 1972. 106 p. (H. L. Jones)
The perceptions of adults and JHS students to potential health problems of these students were compared, resulting in the determination of a comprehensive health problems inventory. Responses were received from 315 8th grade students from 4 selected JHSs that included a HE program, 269 8th grade students from 3 selected JHSs that had no HE program, 141 parents of the students with the health program,

11 health educators, and 7 medical doctors. Parents of students who were subjected to the health program generally perceived the health problems of those students in a different manner than did the students. These parents also perceived the problems differently than did the health educators and medical doctors. The health educators and medical doctors perceived the health problems in a similar manner. The boys and girls who received the health program also perceived the problems in a similar manner. A marked reduction of emphasis was placed on the health items perceived as problems by the JHS students after having been subjected to the HE program.

242 QUINN, Lee W. *Experimenter bias in a gross motor learning task.* Ph.D. in Physical Education, 1972. 161 p. (M. H. Eyler)

Male experimenters ($N = 5$) each tested 12 undergraduate male Ss on the modified Bachman ladder task. The 60 Ss were assigned to conditions of high, low, or unknown expectancy of performance following a preliminary but fictitious test of balance, which the experimenters were led to believe was the basis of the assignment. Six bouts totaling 60 trials were administered in blocks of 10 with 2 bouts being given each week for 3 wk. A low and nonsignificant correlation was found between performance on the ladder task and experimenter expectancy. No significant difference was obtained between expectancy group means. Analysis of the differences between experimenter means showed a difference between means ($p < .05$) for experimenter 2 and 4. The data do not support the postulate that this task is subject to experimenter expectancy bias. The data do support the idea that results obtained by individual experimenters may be significantly different.

243 ROBERTS, John W. *The effects of degree of involvement upon the level of aggression of spectators before and after a university basketball game.* M.A. in Physical Education, 1972. 93 p. (B. F. Husman)

Male and female spectators were tested for their aggressive responses with 6 pictures of the Thematic Apperception Test given before and after observing a Maryland basketball game. Eleven of the Rioteers, the official cheerleading section, served as the exp. group, and the control group consisted of 17 students from the Required PE program. The ANOVA for both frequency and intensity of aggression between groups when averaged across both test levels resulted in a nonsignificant *F* ratio, thus indicating that the degree of involvement did not influence the aggression of spectators. A difference was found for frequency of aggression, thus indicating that regardless of group association both groups displayed evidence of catharsis after viewing the basketball game. No difference was found for intensity of aggression, indicating that degree of involvement did not influence the intensity of aggression of spectators. The interaction between tests and groups for both frequency and intensity of aggression was nonsignificant, indicating that degree of involvement did not influence the 2 groups' responses depending upon the test level investigated.

244 SCHUBLE, Sue E. *The effects of training and varied detraining periods on retention of cardiovascular endurance in college women.* M.A. in Physical Education, 1972. 133 p. (D. H. Clarke)

Women college students ($N = 22$) trained 3 days per week for 8 wk. at a cadence of 60 rpm on a bicycle ergometer. Training consisted of a 2-bout ride with workloads increased every 2 min. until the S's PR surpassed 170 bpm. Following the training program, the Ss were assigned to either a 5- or 10-wk. detraining period. Training and varied detraining periods produced no changes in max VO_2. Significant increases in performance, designated by riding time during training, occured from pre- to posttesting and from pre- to retention testing, and a significant decrease resulted from post- to retention testing. The amount of retention at 5 and 10 wk. did not vary.

245 STANTON, Janice B. *Nutrition misconceptions of secondary youth.* M.A. in Health Education, 1972. 77 p. (M. A. Tifft)

The Osman Nutrition Misconception Instrument was administered to selected SHS youth in Maryland. Five variables (sex, prior health instruction, size of the family, occupation of the father, and occupation of the mother) were investigated for their effect on belief in nutrition misconceptions. Boys had a higher belief in misconceptions than girls. Students never receiving prior health instruction held a higher belief in nutritional fallacies than those who had previously taken health education. Students whose fathers were in nonprofessional occupation had a higher incidence of belief in misconceptions regarding nutrition than students whose fathers held professional jobs. Students from a 6- or-more-child family had a higher belief in nutrition misconceptions than students from a 1- or 2-child family. The remaining variable, occupation of the mother, revealed no significant differences in misconceptions.

246 TALAG, Trinidad S. *The differences and relationships between degrees of induced residual muscular soreness and concentric, eccentric, and static contractions, limb volume, and muscular strength.* Ph.D. in Physical Education, 1972. 115 p. (D. H. Clarke)

Ss (N = 60) were assigned to 1 of 3 groups: concentric contraction, eccentric contraction, and static contraction. Residual muscular soreness was induced through the 3 types of contractions performed on the nondominant arm, using a barbell with the weight adjusted to a % of each S's max strength. Repeated max bouts with 2-min. rests were administered. Muscular strength and limb volume measurements were teken before exercise, immediately after exercise, and 24, 48, and 72 hr. later. Soreness was measured through a soreness rating scale. Eccentric contractions effected greater residual muscular soreness, resulted in depressed muscular strength and increased limb volume over concentric and static contractions after 24, 48, and 72 hr. The peak of soreness occurred after 48 hr.

247 WATERS, Corinda S. *A century of health instruction in the public schools of Maryland, 1872-1972.* Ph.D. in Health Education, 1972. 500 p. (H. L. Jones)

The health instruction program evolved within the administrative framework of the state's educational system, but the many forces and movements which facilitated its early development originated in other community institutions. In the mid-19th century public health officials proposed that education for healthful living be provided for all pupils in the common schools. A decade later, the Maryland affiliate of the Women's Christian Temperance Union launched a campaign to make antinarcotic education mandatory in the public schools. Such legislation was enacted in 1892, marking the beginning of health instruction in Maryland. The World War I years generated increased interest in the health of youth. The Tuberculosis Association launched its Modern Health Crusade, which influenced health teaching for several decades. This was complemented by the HE movement of the Child Health Organizations. The School Medical Inspection Plan was made mandatory and PE programs were expanded. Both programs possessed limited opportunities for health teaching. From its inception until the mid-1960's, the health instruction program was an unorganized sporadic effort contingent upon the goals of related subject matter fields and the propensity of individual teachers for facilitating the development of their pupils. In 1965 the Division of HE was created, replete with a specialist and laws mandating the public schools to develop comprehensive programs. Since this time Maryland has made substantial gains in structuring an organized program of health instruction.

248 WRESTLER, Frank A. *The development of professional identification among chiropractic students.* Ph.D. in Health Education, 1972. 142 p. (H. L. Jones)

The chiropractic student was evaluated by a survey of critical literature which concentrated on the historical perspective, the education and training aspect, and the scientific and clinical bases of chiropractic; participant observation in which the researcher spent 4 mo. attending a school of chiropractic as a regular chiropractic student; and a social survey. The chiropractic's basic premise, that is, the subluxated vertebrae and its irritation of the nervous system produces disease, is unproven from a scientific and clinical standpoint. Chiropractic students perceive society as viewing the chiropractor as inferior to the medical doctor and osteopath. Chiropractic students see the chiropractor as filling a role in the healing arts which differs significantly from the medical doctor and osteopath. Chiropractic students consider their healing art as equivalent or superior to medicine and osteopathy and indicate a wide scope of practice and high degree of efficacy. Chiropractic students are uncertain as to where the boundaries of chiropractic practice should be drawn.

University of Massachusetts, Amherst, Massachusetts (W. Bloomrose)

249 BLOOMROSE, Wayne F. *The effects of breathing gases with high oxygen content on recovery from mild stress.* M.S. in Exercise Science, 1972. 47 p. (B. Sleet)

Recovery HR and VO_2 levels were repeatedly estimated on 6 college age males following running on a motor driven treadmill at a speed of 9 km/hr and a grade of 4%. During early recovery, the Ss inspired 100 L. of a test gas, which was either ambient air, 66% O_2 in 34% N_2, or 100% O_2. Gases inspired during the recovery phase were administered according to the single blind protocol. Data collected on the recovery levels of 18 trials for each S showed no differences among the 3 test gases at the .05 level. These results support the contention that there is no ergogenic benefit with the administration of O_2 enriched air during recovery from mild stress.

250 GRIFFIN, PATRICIA S. *Perceptions of women's roles and female sport involvement among a selected sample of college students.* M.S. in Physical Education, 1972. 186 p. (J. W. Loy)

Undergraduate men and women (N = 279) completed a test inventory to determine their perceptions of 6 women's roles, including the woman athlete, and female sport involvement in selected sports. This study also sought to determine the association of selected sociocultural characteristics with perceptions of women's roles and female sport involvement. A multiple discriminant function analysis revealed that college students have distinct perceptions of the women's roles, but not necessarily the selected sports. Sex and cosmopolitanism were the sociocultural characteristics related to perceptions of the women's roles. Only cosmopolitanism was related to perceptions of female involvement in selected sports.

University of Massachusetts, Amherst, Massachusetts (M. L. Lanphear)

251. LANPHEAR, Margaret L. *Fractionated reaction and reflex times on nine to twelve year old mentally retarded boys.* M.S. in Physical Education, 1972. 99 p. (W. Kroll)

Visual RT and patellar reflex times were fractionated on a sample of 6 mentally retarded boys between the ages of 9 and 12. The electromyographic fractionation technique allowed assessment of the premotor time component of the voluntary leg kick and the reflex latency of the "knee-jerk" as well as the motor time component or actual muscle contraction time of both the tasks. The data which were collected from each S over at least a 3-day testing period were analyzed with a repeated measures ANOVA test and it was found that motor time of the RT testing was different from the motor time of the reflex, significant at the .05 level. It was also found that the premotor time and motor time components accounted for approximately the same percentage of the total RT delay that studies done on normal Ss have reported although the RT of these retarded boys is much longer than what has been reported for the intellectually normal population.

252. MROZ, Joseph H. *A comparison of the effects of two different lead-off positions in baseball upon running times in stealing second base.* M.Ed. in Physical Education, 1972. 55 p. (C. R. Schroeder)

SHS baseball players (N=30) were timed by a specially constructed electronic measuring device as they ran from 1st base to 2nd base from a direct-line and from an outfield lead-off position. They were also timed as they dived back to 1st base from the 2 respective, lead-off positions. While the M times to 2nd base showed no significant difference, there was a significant difference between the M times back to 1st base. More time was required to dive back to 1st base from the outfield lead-off position.

Memphis State University, Memphis, Tennessee (D. A. Pease)

253. TIPPETT, Terrell W. *The "choking" phenomenon: The effect of stress in complex motor skill performance of individuals with differing ego-strengths.* M.Ed. in Physical Education, 1972. 65 p. (D. A. Pease)

The tendency for individuals to sometimes become unable to function up to their normal capacity when under stress, was tested based upon Rosenzweig's theoretical viewpoint that "stress-tolerance" is a function of an individual's *ego-strength*. 99 SHS A and B team basketball players were given the Barron Ego-Strength (Es) Scale of the MMPI, and categorized into high, middle, and low Es groups. The Ss were then each tested for free-throw shooting accuracy (FTSA) under conditions of stress (before an audience) and nonstress (not before an audience). The ANOVA performed revealed no significant differences in the FTSA between Ss of differing ego-strengths when under stress and when not under stress. A separate analysis was conducted by omitting what proved to be inaccurate data, and the following results were found: There was no decrease in FTSA among high Es Ss when placed under stress. There was a ($p < .05$) decrease in FTSA among low Es Ss when placed under stress.

254. DIETRICK, Frank L. *The effects of isometric, isotonic, and isokinetic training programs upon push-up achievement in high school boys.* M.A. in Physical Education, 1972. 29 p. (W. Van Huss)

Twenty-eight HS boys were selected and assigned to 4 treatment groups. Each S was pretested for the number of complete push-ups executed at 3 different push-up rates. A 5-wk. training program was initiated with the control group attending regular PE classes daily and the exp. groups training using their group technique on a bench press exercise for 3 days and attending regular PE classes the other 2 days. After post tests a 2-way ANOVA indicated a significant difference between the 4 groups on treatment, but neither the push-up rate effect nor the interactions were significant.

255. HICKSON, Robert C. *The effects of dianabol and anaerobic endurance exercise on selected anatomical and histochemical parameters in the adult male albino rat.* M.A. in Physical Education, 1972. 101 p. (W. Heusner)

Dianabol was the anabolic steroid used in a program of endurance running. Male (N=42) albino rats of 3 different age levels were used in a high intensity, short duration controlled running wheel program. Body composition and various organ wts. as well as histochemical determination of glycogen storage and phosphorylase activity in 10 locations of the gastrocnemous-plantaris-soleus muscle groups were investigated. Anaerobic training after 8 wk. produced smaller body wts. and smaller absolute wts. of the liver, spleen, kidneys, and muscle in the exercised group. The relative wts. of the adrenals, heart, liver, teste , kidneys, and muscle were larger in the exercised group than those of the sedentary group. Relative spleen wt. was smaller in the exercised group. Body wt. of the Dianabol and placebo groups were both greater than the control group, but not different from each other. Phosphorylase was depleted in all 10 muscle areas as a result of exercise. An increase of glycogen in several muscle areas occurred with training. Absolute fiber size showed no changes with either the training or drug treatments.

256. MOSHER, Richard E. *The effects of an objective centered, sequential program of physical education on the academic achievement and intelligence of elementary school-aged children.* Ph.D. in Physical Education, 1972. 99 p. (P. Reuschlein)

Two schools, 1 exp. and 1 control, were selected and the children, kindergarten through the 5th grade, were tested (N=607). The 3 tests, Stanford Early School Achievement Test, Stanford Achievement Test, and the Otis-Lennon Mental Ability Test, were administered for pretest and posttest data collection. The treatment for the exp. school was a 1 yr. PE program which was research based, objective centered, and sequentially programmed covering a wide range of skills and activities. Stress was placed on the total development of the child and particular activities were used to enhance social, emotional, and cognitive physical functioning. The exp. program did not facilitate the learning of academic concepts of children, male or female, or total group. Isolated effects were noted in both the total group and male and female, but no consistent trends were noted.

257. REED, Alfred T. *Succinic dehydrogenase and motor end-plate cholinester[illegible]ronically exercised rat skeletal muscle.* Ph.D. in Physical Education, 1972. 74 p. (W. Heusner)

Male, albino rats (N=176), 72 days old, were assigned to 7 treatment groups. The groups were: sedentary control; voluntary running; short-duration, high-intensity running; medium-duration, moderate-intensity running; long-duration, low-intensity running; electric stimulus control; and endurance swimming. The treatments were administered Monday through Friday under controlled environmental conditions. The healthiest and best trained animals were sacrificed at the onset and 4, 8, and 12 wk. after the start of treatment. Of the 2 muscles investigated, the soleus displayed more specific patterns of adaptation than did the tibialis anterior.

258. TILLMAN, Thomas N. *Psychogenic effects of environmental cues on physiologic responses to submaximal work under hypoxic conditions.* Ph.D. in Physical Education, 1972. 158 p. (W. Van Huss)

Male graduate and undergraduate PE majors (N=8), ranging in age from 20 to 33 yr., were selected on the basis of having a reasonable cardiovascular fitness for endurance work performance. The treatment of these Ss was a standard run of 5 min. at 7 mph and 0 grade on a motor driven treadmill as the submax work task in each of 4 test conditions. HR (ECG), and respiratory rate were recorded continuously during each 5 min. run and 15 min. recovery period while samples of air, using the Douglas bag technique, were analyzed for O_2 and CO_2 percentages. The 4 test conditions were: breathing normoxic air when told it was normoxic; breathing normoxic air when told it was hypoxic; breathing hypoxic air when told it was hypoxic; and breathing hypoxic air when told it was normoxic. The results indicate that environmental cues can affect physiologic responses during work performance and that the effects produced can be modified by training.

259. RYAN, John T. *A cinematographical analysis of the baseball swing.* M.A. in Physical Education, 1972. 90 p. (J. Anderson)

Varsity (N=5) and fresh. baseball players (N=5) were selected for comparison of: pertinent angles just prior to the bat and ball contact including the bat, forearm, hip angles, and leading forearm angle; measurement and comparison of the pertinent angles at contact; the percentage of time each joint was acting from the beginning of the 1st movement forward to contact; the leading forearm angle, the struck ball velocity after contact and bat velocity after contact; the contribution of each of the acting body segments to the total velocity applied to the ball; and the relationship of joint summation of velocities and the measured velocity of the ball. The relevant factors which separated the more skilled varsity players from the less skilled fresh. were: the initiation of the swing by rotating the hips freeing the upper body for rotation; and the employment of the wrists as a major contributor of approximately 50% of the linear velocity of the ball.

University of Michigan, Ann Arbor, Michigan (V. T. Kachi)

260 BOWMAN, Betty. *Learning experiences in selected aspects of a dance movement sequence.* Ph.D. in Physical Education, 1972. 98 p. (S. Cooper)

261 KNEER, Marian. *Influence of selected factors and techniques on student satisfaction with a physical education experience.* Ph.D. in Physical Education, 1972. 131 p. (S. Cooper)

262 LEWIS, George. *An exploratory study of relationships of apparatus movement skills with selected physical and psychological characteristics of kindergarten-aged males.* Ph.D. in Physical Education, 1972. 201 p. (S. Cooper)

263 MONTPETIT, Richard. *Physiological investigation of elite gymnasts.* Ph.D. in Physical Education, 1972. 98 p. (J. A. Faulkner)

264 OLSON, Herbert. *A comparison of longevity and mortality of athletes and nonathletes.* Ph.D. in Physical Education, 1972. 163 p. (P. Hunsicker)

University of Minnesota, Minneapolis, Minnesota (J. Shick)

265 BUCK, Richard R. *Knowledge of mechanical principles to facilitate learning a trampoline skill using television as an evaluation aid.* Ph.D. in Education, 1972. 107 p. (M. L. Wilson)

Seventh and 8th grade boys and girls (N = 46) were assigned to 2 groups and taught a 10-period unit on the trampoline. The teaching was identical for both groups except for the application of selected mechanical principles for the exp. group. The principles selected governed the execution of the skill, swivel hips. Ss were evaluated on live performance by 2 types of evaluators using different rating scales: expert gymnastic judges using terminology typical of gymnastic meets and undergraduate kinesology students using selected principles. Ss were reevaluated by means of a videotape playback of the live performance. Rating by videotape playback provided an effective evaluation of the performance for both types of evaluators. Live evaluations did not provide such assurance for this complex skill. The teaching of mechanical principles to learners of swivel hips increased the degree of skill at which the learners performed over students who were not taught the mechanical principles.

266 EINSTAD, Thomas L. *A comparison of attitudes toward physical education among selected junior high school boys receiving letter grades and/or participating in teacher-student conferences.* Ph.D. in Education, 1972. 160 p. (J. Alexander)

315 boys were assigned to 3 groups. Group 1 (N = 45) participated in 4 goal-setting and feedback conferences with their teacher and received letter grades on their report cards. Group 2 (N = 45) participated in the same series of conferences but received no letter grades on their report cards. Group 3 (N = 225) received no conferences and were graded in the traditional manner. At the end of the 16-wk. exp. period, the Ss' PE attitude was measured by use of the *Lexington Attitude Scale for High School Freshman Boys.* Ss' PE achievement level was measured by GPA even though some Ss received no grade on their report card. Separate two-way fixed effects ANOVA were carried out for each grade on both the Attitude Scale and the PE GPA. Significant differences ($p < .01$) were: between 7th and 8th graders in the conference only group; between 7th and 9th graders in the grade and conference, and the grade only groups; and between 8th and 9th graders in the conference only, grade and conference, and the grade only groups. No differences were found in PE attitude between the groups as a result of their receiving conferences, letter grades or both conferences and grades nor PE achievement as a result of exp. treatment or grade in school.

267 HOCHTRITT, David L. *An analysis of male attitudes toward articulation patterns among the University of Wisconsin, the nine universities in the Wisconsin State University system and the private colleges in the professional preparation of physical educators in the state of Wisconsin.* Ph.D. in Education, 1972. 217 p. (J. E. Alexander)

Two questionnaires were constructed and refined on the basis of a preliminary study instrument which had been submitted to a national jury of experts. The questionnaires were sent to the dept. chairmen and all male faculty members who held the rank of assistant professor or above in the departments of PE in the 23 colleges and univs. throughout Wisconsin. Over 91% returned questionnaires. The results were analyzed according to a general consensus of all 23 institutions, among and between selected faculty groups, types of institutions, and types of professional preparation programs offered. Respondents agree that philosophies and objectives in PE should be coordinated among the colleges and universities in Wisconsin. They also approve of these same institutions working together as a consortium with the State

Dept. of Public Instruction to determine certification and accreditation in PE. Respondents favor lab. and field experiences that are cooperatively planned and coordinated with other state institutions and agree that academic qualifications, teaching load, and selection of personnel of those in the dual capacity of physical educators and coaches should be the responsibility of each institution. Institutions with graduate programs in PE oppose the coordination of these programs with either undergraduate or graduate programs in other state institutions. Efforts to arrive at a common irreducible minimum of course experiences or competencies were approved. There is a need to improve interinstitutional articulation in the areas of publicatons, associations, and professional activities.

268 McKECHNEY, Ronald G. *The effects of exercise upon learning under psychological stress of rats.* Ph.D. in Education, 1972. 131 p. (J. F. Alexander)

Male Sprague-Dawley white rats were assigned to 2 groups; the exp. group (N = 15) exercised for 5 wk. under forced conditions on a motor driven treadmill at 2 bouts of .5 hr. duration of 50 ft/min, terminated with identical bouts of 90 ft/min by the 5th wk. of the treatment phase. The control group (N = 15) remained sedentary throughout the treatment phase. Both groups were then required to learn 4 mental tasks of increasing complexity on a Hebb-Williams maze under a 90 decibel white noise stress. The study terminated when each rat had learned all 4 problems. The findings indicated that the exp. or forced exercise group required fewer days to complete the 4 maze problems. M differences between groups increase as problem scores are summed with small increases in the standard error indicating an increasing confidence interval. Cumulative number of trials to learn maze problems to criteria and the cumulative time of the 3 criteria trials on day that criteria was reached indicated differences between the learning of the 2 groups.

269 SCHWARZKOPF, Robert J. *Oxygen consumption and heart rate changes of two gymnastic ring routines due to warm-up, training and fatigue.* Ph.D. in Physical Education, 1972. 154 p. (P. J. Bird)

Ss were trained ring specialists (N = 5) and untrained college students (N = 9). O_2 consumption and HR were measured for a 10-min. exercise-recovery period from the start of a standardized ring routine (differing for each group) lasting slightly over 30 sec. For the trained group, a related warm-up resulted in the lowest group M O_2 consumption. HRs were lowest following no warm-up. Increases in O_2 consumption and HR from succeeding repetitions of the test routine within a test session suggested the presence of fatigue. No relationships were found between the M VO_2 of the trained subjects and the selected parameters. For the untrained group, warm-up was effective in decreasing O_2 consumption. A downward trend in O_2 consumption over the training period was found but a consistent decrease in HR was not. Efficiency of performance was computed from cinematographic analysis of vertical movement of the center of gravity and O_2 consumption. Efficiencies were found to be low (3.76% trained, 3.26% untrained) in comparison to locomotor activities.

270 TROYER, Beverly Jayne. *The influence of personal factors on attitudes of college students toward human sexuality and sexual decision-making situations in a selected Minnesota college.* Ph.D. in School Health Education, 1971. 169 p. (H. M. Slocum)

An attitude scale and set of decision making situations based on 3 broad positions of morality were developed and administered to 501 men and women college students. A biographical data sheet was devised to classify the population. Data treatment included *r*, intercorrelations, ANOVA, and X^2. There was a significant *r* between each of the 3 positions on the 2 instruments. Differences existed in attitudes and in decision-making between those of different sex, age, college residence, religion, marital status, dating practice, home area, and those who had had a course or unit in sex education and those who had not.

University of Minnesota, Minneapolis, Minnesota (J. Kasper)

271 WAXLAX, Robert G. *A determination of the influence of sports stories on the self concept, teacher observation and sociometry of elementary school children.* Ph.D. in Education, 1972. 196 p. (P. Bird)

An exp. group (N = 56) and a control group (N = 56) were randomly selected by class from 112 3rd and 4th grade boys and girls at St. Peter's School in St. Cloud, Minnesota. The Ss were pretested and posttested using the *Piers Harris Children's Self Concept Scale,* a teacher observation rating scale and a sociometric technique. During a 5-wk. session, the exp. group listened to and discussed 10 selected sports stories from *Play the Game* by Robert McAdam. The control group continued its normal daily routine and had no contact with the investigator or the stories. The Univ. of Minnesota version of the multivariate ANCOVA yielded the following findings: in 6 of the 26 variables submitted, the sports stories appeared to effect the exp. groups' appraisal of their behavior and happiness-satisfaction, and the 3rd grade portion of the exp. groups' appraisal of their popularity. Within the exp. group, further significance was determined in the peer observation of behavior in females and the intellectual-school status of the 3rd grade females.

University of Minnesota, Minneapolis, Minnesota (J. Shick)

272 WILKIE, David R. *Effects of selected variables on the longitudinal displacement of a curling stone.* Ph.D. in Physical Education, 1972. 119 p. (J. E. Alexander)

Beginning male curlers (N = 20) were assigned to a North American corn broom or a European brush. After 6 lessons, they were tested against their counterparts on the other broom. Advanced curlers (N = 10) were given 2 lessons on the brush followed by a testing session. Each S acted as his own control, sweeping twice with each broom. The 3rd investigation consisted of 10 advanced curlers sweeping twice with each of the 3 styles of North American brooms (straw, nylon-covered straw, synthetic). Comparisons in all 3 investigations were on the dependent variable of distance (longitudinal displacement) the stone traveled. All investigations were analyzed by a multivariate ANOVA for repeated measures. Results indicated: for beginning curlers, the brush was more effective (greater distance); for the advanced curlers who preferred the broom to the brush, the broom was more effective (greater distance). The reliability of the mechanical ejector, correlating odd-even trials and corrected by the Spearman-Brown formula, was above .90. The force generated by the ejector during each trial in all investigations was approximately 252 lb. Calibration was determined by a standard strain gauge method.

273 WILSON, Judith. *A cinematographical analysis of selected sprint starts in track for women.* Ph.D. in Physical Education, 1972. 118 p. (M. L. Wilson)

Skilled college women sprinters (N = 8) were filmed while performing 6 starts, the bunch, the medium, the rocket, and a variation of each of these 3 starts using an extended rear leg. Five factors believed to be related to the success of the track start were timed or measured: 15-yd. time, block time, angle of forward lean, angle of hip elevation, and angle of leg at point of touchdown. Block time and 15-yd. time served as success criteria. According to block time data, the rocket start is better than either the bunch start or the medium start, and the bunch start is superior to the medium start. According to 15-yd. time data, both the bunch and rocket type starts are superior to the medium start but no difference existed between rocket and bunch starts; each extended rear leg start is superior to its corresponding ordinary start; and high hip elevations are superior to lower hip positions. There does not appear to be a relationship between angle of the leg at point of touchdown or angle of forward lean and success in the start.

University of Missouri, Columbia, Missouri (J. A. Roberts)

274 ANKENBRAND, Larry J. *The self concept of students physically handicapped and nonhandicapped related to participation in an individual sport.* Ed.D., 1972. 169 p. (H. W. Heding)

College fresh. who were not physically handicapped were compared to fresh. and soph. college students who were severely physically handicapped as to changes in bowling knowledge, bowling skill, self-concept, self-acceptance, and ideal concept following participation in an 8-wk. PE program of bowling. Pretest-posttest differences revealed a significantly greater improvement on the measures of bowling skill, self-concept, and self-acceptance by the handicapped students than by the nonhandicapped students. Correlations based upon posttest scores of the handicapped Ss disclose that relationships existed between bowling knowledge and self-acceptance; bowling skill and self-concept; bowling skill and self-acceptance; self-concept and self-acceptance; and self-concept and ideal concept. For the nonhandicapped students the significant *r*'s were between bowling knowledge and bowling skill; self-concept and self-acceptance; and self-concept and ideal concept. With measure of improvement as the criterion, significant *r*'s existed for the handicapped students between bowling skill and self-concept; bowling skill and self-acceptance; and bowling skill and ideal concept. For the nonhandicapped students the significant *r*'s were between bowling knowledge and bowling skill; bowling skill and self-concept; bowling skill and self-acceptance; self-concept and self-acceptance; and self-concept and ideal concept.

275 CREWS, Thaddeus R. *Interaction of frequency and intensity of training on physical work capacity.* Ph.D., 1972. 139 p. (J. A. Roberts)

Sedentary male faculty members (N = 46) of the Univ. of Missouri were Ss in an investigation to examine the effect of the interaction of frequency and intensity of training on physical work capacity. The Ss trained for 7 wk. as members of 6 groups representing all possible combinations of 3 levels of frequency of training (5, 3, or 1 day/wk.), and 2 levels of intensity of training (exercise HRs of 150 or 120 bpm). All participants exercised 90 min/wk. No interaction effect was revealed for any of the dependent variables. Examination of the main effects for physical work capacity indicates a superior training effect for those Ss in the higher intensity groups. Additionally, both the 5- and 3-day/wk groups had greater improvement than the 1-day/wk group. There was no difference between the 5 and 3-day/wk groups.

276. McARTOR, Eugene S. *The effects of three specific anaerobic training programs on oxygen debt and anaerobic power.* Ph.D., 1972. (Floyd G. Delon)
Male athletes (N=23) from the Univ. of Missouri were studied to determine the specificity in effects of 3 anaerobic power training programs (Alactacid, Lactacid, Alactacid plus Lactacid) on max. work intensities, blood lactate concentrations, and O_2 debt. Four training programs were established, including 1 aerobic training program to serve as a control. The Ss trained for 6 wk. at a frequency of 3 times/wk. Each anaerobic training program consisted of intermittent work and rest periods of duration and intensity designed to develop specific components of anaerobic power. No differences were identified for any dependent variable between the anaerobic training programs. Each of the 4 training programs produced significant increases for most of the dependent variables. The magnitude of the increases gave some evidence for the possible specific nature of anaerobic power training.

University of Montana, Missoula, Montana (B. J. Sharkey)

277. BOSCHEE, Floyd. *A comparison of the effects of command, task and individual program styles of teaching on four developmental channels.* Ed.D. in Education, 1972. 162 p. (J. J. Hunt and J. L. Dayries)
Command, task, and individual program styles of teaching, as described by Mosston, were compared in their effects on specific motor skills in alley soccer, a game knowledge test in alley soccer and personal and social adjustment as measured by the CPI. Fifth grade boys and girls (N=221) from 3 ELE schools served as Ss whose classes met for 25 min. for 3 or 5 times/wk for 8 wk. The major findings were that the exp. styles were not significantly different from each other in terms of overall improvement between the pre and postbattery of motor skills test, and pre and postpersonal adjustment and social adjustment test scores. Significant differences existed between the task and individual program styles on the pre and postgame knowledge test.

278. DeVRYE, Catherine F. *An investigation of attitudes of physical education majors and those attitudes of their respective parents toward physical education.* M.S. in Physical Education, 1972. 57 p. (J. L. Dayries)
The attitude differences between jr. and sr. PE majors (N=42) and their parents (N=84) were assessed with the Wear Attitude Inventory. Both groups expressed very positive attitudes toward PE, however, ANOVA revealed no differences between M scores between parents and students. Mothers of female PE majors scored higher on the WAI than did fathers of female PE majors. Also mothers of male majors scored higher than fathers of female majors.

279. DIETZ, William H. *Relationships between the Edwards Personal Preference Schedule and the Kenyon Attitude Inventory.* M.S. in Physical Education, 1972. 48 p. (J. L. Dayries)
The relationship between personality variables as measured by the EPPS and attitudes toward physical activity as assessed by the KAI was determined from the administration of the inventories to 200 male students enrolled in selected activity courses. Results indicated positive relationships (Pearson) between autonomy and vertigo, intraception and aesthetic, change and vertigo, endurance and health and fitness, and endurance and ascetic. Negative relationships appeared between deference and vertigo, autonomy and social, autonomy and ascetic, succorance and health and fitness, succorance and ascetic, and aggression and aesthetic. It was concluded from the multiple *r* analysis that the predictive power from one instrument to the other was very low.

280. KIEMELE, Diane G. *A comparison of perceived and actual verbal interaction in elementary school physical education classes.* M.S. in Physical Education, 1972. 70 p. (G. A. Nygaard)
This study used the Flanders System of Interaction Analysis to compare the expected and actual verbal behavior of 24 ELE school teachers. The total sample was unable to predict verbal interaction between themselves and their students. The teachers were significantly more direct than they predicted they would be. Both experienced and nonexperienced teachers predicted similar interaction and carried out similar interaction, but they did not carry out the interaction predicted. The primary interaction pattern consisted of silence or confusion, directions, silence or confusion, lecture, silence or confusion.

281. McTEER, William Gerard. *The criminal athlete: A case study.* M.S. in Physical Education, 1972. 37 p. (J. L. Dayries)
The sports background of institutionalized criminals having a history of participation in sport was assessed by personal interviews. The major focus was on the relationship between sport and crime relative to aggression. Violent criminals were found to participate in more organized sports than nonviolent criminals and violent criminals also expressed a greater desire to win than did their nonviolent counterparts.

282 **WIESNER, Robert R.** *The relationship of selected physical activity and performance characteristics to backpacker wilderness use among college men.* M.S. in Physical Education, 1972. 57 p. (B. J. Sharkey)

College men (N = 72) were randomly selected to serve as Ss in a study to: determine the relationship of previous sport experiences to backpacker wilderness usage (WB), compare WB and nonbackpacker nonwilderness users (NU) in regard to strength and physical fitness and to compare attitudes toward physical activity among WB and NU. The WB was found to score significantly higher on two attitude scales, vertigo and health and fitness than the NU. Also, the WB and NU differed in the hierarchical ordering of the attitude scales. The NU rated the social value of physical activity above all others while the WB group ranked that subset 5th in the list of 6 scales.

New York University, New York, New York

283 **BATTISTA, Anna.** *An exploration of factors associated with the effectiveness of training health education teachers. An evaluation of New York University's Experienced Teacher Fellowship Program in sex education for the elementary school.* Ph.D., 1972. 341 p. (M. V. Hamburg)

It was the purpose of this investigation to assess the effects of a Fellowship Program in Sex Education for ELE schools on teachers' knowledge of human sexuality, their attitudes toward sex education, toward teaching in general, and toward self, and to explore factors associated with the effectiveness of training HE teachers. Data were obtained from 19 fellows in the program by means of various pre- and posttests and other case study methods. Data indicated that the program had positive effects on the assessed areas, and that the change in attitudes toward sex education was related to fulfillment of initial expectations, to the strength of affiliation with central faculty members, and to the degree of expected employment in the field of sex education.

284 **CRAWFORD, Charles L.** *The relationship between the change in the freshman eligibility rule and selected factors in intercollegiate athletic programs.* Ed.D., 1972. 90 p. (S. F. Pechar)

In September 1969, it became permissible for E.C.A.C. member institutions to use fresh. athletes on varsity teams in regular season competition in all sports except football, basketball, and ice hockey. The purpose of this study was to determine what relationship, if any, existed between the adoption of this new fresh. eligibility rule, and changes in the number of teams sponsored, number of students participating, scheduling practices, and cost of intercollegiate athletics at E.C.A.C. member institutions between September 1, 1969, and June 1, 1971. A 2-part questionnaire was sent to the ADs of 113 eligible E.C.A.C. institutions to secure prerule and postrule data. The findings indicated a relationship, at the .05 level, between adoption of the new fresh. rule and: fewer teams sponsored; less student participation; less increase in cost. There was no relationship between adoption of the new rule and increased scheduling difficulty.

285. **CUTLER, C. Stanley, Jr.** *A comparison of attainment of selected physical education objectives in graded and nongraded physical education.* Ed.D., 1972. 123 p. (R. A. Weiss)

This study compared the attainment of selected PE objectives in graded and nongraded physical education. Instruments measured outcomes for the following objectives in PE: physical fitness, general motor ability, attitude toward physical education, body image, and achievement on soccer skills. ANCOVA was used to adjust the posttest results for any differences in the pretest performance of the Ss. There were differences in favor of the nongraded group in motor ability, physical fitness, and achievement in soccer skills. There were no differences between the graded and nongraded groups in body image and attitude toward PE.

286 **GILLESPIE, Virginia B.** *A study to establish guidelines for programs of family camping in order that patterns of operation can be suggested that are based on validated principles.* Ed.D., 1971. 392 p. (E. L. Ball)

This study established general guidelines for programs of family camping in either government, private, or nonprofit agency campgrounds. The guidelines were established through questionnaire and interview and the evaluation of 17 National Parks campgrounds. The questionnaire established basic information regarding: Time and distance, Personal data, Interest preferences, and Type of camping. Fourteen principles of evaluation for programs of family camping were established with the assistance of a jury. The evaluation was conducted by the staff of each National Park and the investigator. An analysis of the data was the basis for broad recommendations.

287 **LEFEBVRE, Claudette B.** *The comparative effects of three- and six-week periods of residential camping on physical fitness and adaptive behavior in children and youth with brain dysfunction*

syndromes. Ph.D., 1971. 153 p. (E. L. Ball)

The study to compare the effects of 3- and 6-wk. periods of residential camping on physical fitness and adaptive behavior included 64 noninstitutionalized Ss in the following diagnostic categories: mental retardation, minimal brain dysfunction syndrome, cerebral palsy, epilepsy, emotional disturbance, and multiple handicaps. There were 22 males, 10 females and 20 males, 12 females in the 3- and 6-wk. groups, respectively. Ss were evaluated on the Hayden Test of Physical Fitness for the Mentally Retarded and on the Adaptive Behavior Scale at the outset and termination of their camping experiences. Fisher's *t* and ANCOVA were used. Results suggest that there were improvements in physical fitness and adaptive behavior for both 3- and 6-wk. Ss and that improvement in adaptive behavior was greater for the 6-wk. Ss. No differences in achievement were found between either males and females or younger and older Ss.

288. LYNCH, Lillie R. *A comparison of the health and college adjustment problems of Jersey City state (New Jersey) college: Freshman resident and non-resident women students.* Ph.D., 1971. 100 p. (M. V. Hamburg)

A comparison was made to determine whether fresh. residents develop more problems than fresh. nonresidents. The instrument used was the college form of the Mooney Problem Check List. The *t* test for matched groups and the rank difference *r* were applied to a sample of 66 Ss and the results indicated: no difference for resident and nonresident fresh. women in number and distribution of problems at the beginning of the semester, a significant reduction during the semester in number of problems for nonresidents, but no change for residents, a difference in distribution of problems for the 2 groups after 1 semester, and a change in the distribution of problems for the 2 groups after 1 semester.

289. MADDEN, Joseph. *The development of a leisure education guide for teachers in the intermediate grades.* Ed.D., 1970. 190 p. (M. A. Gabrielsen)

The 1st part of the study investigated the subjects of leisure, characteristics of intermediate grade children, intermediate grade curricula, and concepts of education as they relate to leisure. The 2nd part included the development of a leisure education guide for teachers. The guide was tested in selected schools on Long Island. Thirty educators in the sample were asked to review and use the pilot guide and to recommend additions and modifications. Suggestions of the 22 who responded were evaluated and incorporated into the final guide.

290. PURETZ, Donald H. *The chronic effects of long-term cigarette smoke inhalation upon the development of cardiorespiratory endurance in albino mice.* Ed.D., 1972. 64 p. (R. A. Weiss)

Pairs of controlled mice (N=50) were used to study the chronic effects of cigarette smoke inhalation on the development of cardiorespiratory (C-R) endurance, utilizing forced swimming against resistance both for training and endurance measurements. Significant differences were found in C-R endurance development in favor of the nonsmoker group. Irreversibility of these differences was also found. These findings generally agree with the theoretical hypotheses that posit that the presence of cigarette-induced physiological damage should reduce C-R efficiency.

291. ROLNICK, Manny. *A survey of current standards and health supervision practices in intercollegiate athletics in selected junior and community colleges with recommendations for improvement in the implementation of these standards.* Ed.D., 1972. 140 p. (M. V. Hamburg)

The literature on the health aspects of sports was reviewed to determine current standards of health supervision in 6 categories: health service, medical examination, conditioning and training, treatment and rehabilitation, safety and first aid, and health counseling. A panel of experts judged, on a 5-point scale for each category, which standards should be used in the conduct of intercollegiate athletics. Using a questionnaire, existing practices in health supervision in the colleges were surveyed. Recommendations to improve the implementation of 43 standards were based on: the needs of the intercollegiate athletic community; the extent to which existing practices in health supervision were not meeting these needs; and varying conditions of sport offerings.

292. SHEPPARD, Samona. *Changes in body concept and self-concept among college students who learn to swim.* Ed.D., 1971. (R. A. Weiss)

This study investigated the effects of learning to swim upon the body concept and self-concept of college students who voluntarily enrolled in nonswimmer classes and the relationship of these effects to sex and swimming proficiency. The sample included 50 male and 50 female nonswimmer students at Queens College who wanted to learn to swim. Males (N=25) and females (N=25) participated in swimming classes 3 times/wk. for 12 wk. Secord and Jourard's Body Cathexis Scale, Bills' Index of Adjustment and Values, Osgood's Semantic Differential Technique, and the Fox Power Test were used. Multivariate ANCOVA was performed on pretest and posttest scores. It was concluded that learning to swim has no effect upon the college student's body concept, self-acceptance, and self-esteem. However, there was evidence that it has a positive effect upon self-description. These effects are unrelated to sex and acquired swimming proficiency.

293 WATTS, Faulkner. *Leisure behavior and aspirations of certain Afro-Americans living in central Harlem.* Ph.D., 1972. 220 p. (E. L. Ball)

This study identified the leisure activities and aspirations of Afro-Americans living in low income housing in central Harlem. Data was elicited from 80 male and 61 female heads of household by means of an interview questionnaire. Two hypotheses were tested: that there would be differences in leisure behavior and aspirations within subgroups when respondents were grouped according to age, occupation, income paid vacation, education, and sex, and that there would be no significant *r* between leisure patterns of the study group and those of a national sampling investigated earlier by the Outdoor Recreation Resources Review Commission (ORRRC). The X^2 test of independence and the rank order *r* were the major statistical tools used. The 1st hypothesis was supported. The 2nd hypothesis could not be sustained. In terms of intensity of participation in activities, Harlem respondents compared unfavorably with the national respondents, behavior patterns and aspirations of both groups were similar.

State University of New York at Buffalo (C. R. Meyers)

294 HILL, Charles E. *Development and evaluation of a computer-based resource unit on obesity and weight control for college students.* Ed.D. in Physical Education, 1972. 144 p. (C. R. Meyers)

The unit as developed consisted of 5 sections; objectives, content statements, activities, resource materials, and measuring devices. Ten instructors and 188 students enrolled in H and PE courses at 10 State Univ. of New York Colleges participated in the study. Only the exp. group had access to computer resource guides. After the unit was administered, a knowledge test and the Hayes Instructor Rating Scale were administered to all participating students. Results obtained from the application of the 2 instruments to students in exp. and control groups were analyzed by a 4- and 3-way ANOVA. No significant difference was found between the groups on either instrument. According to the results of this study, the acquisition of obesity and wt. control knowledge does not differ significantly when Ss have access to CBR guides. CBRU is helpful to college instructors in planning for instruction.

295 MACKETT, Carolyn J. *The relationship of knowledge, performance, and ability to assess and analyze a selected motor skill on videotape.* Ed.D. in Physical Education, 1973. 119 p. (W. D. Loockerman)

Female PE majors ($N = 50$) took a knowledge test covering the diving forward roll from a standing position, were videotaped performing the motor skill, and assessed and analyzed themselves and 4 others performing the motor skill on videotape. A model tape representing typical beginner, low intermediate, high intermediate, and advanced levels of skill was used as the criterion for assessing. An analyzation scale which described the essential features of the diving forward roll from a standing position was used as the criterion for analyzing. Judges were used to provide a M score to compare with the Ss' assessments and analyzations of self and others. A high positive relationship existed between the Ss' ability to assess themselves and their ability to analyze themselves performing the diving forward roll from a standing position. The Ss' ability to assess others performing the motor skill was only slightly related to their ability to analyze others. Low relationships existed between all the other variables evaluated in the study.

296 SHEA, Irene M. *The effect of increasing dynamic leg strength, relative to body weight, on total body reaction and movement time.* Ed.D. in Physical Education, 1972. 123 p. (W. D. Loockerman)

Female PE majors ($N = 50$) were tested for choice RT and MT of the total body utilizing the Loockerman Reaction and Movement Time Analyzer before and after an 8-wk. training program to increase dynamic leg strength. ANCOVA indicated no significant differences ($p > .05$) between groups after the strength increment program on total body RT and MT for a left, right, forward, and backward direction from either an open or closed stance. The open stance was significantly faster than the closed stance for RT in a forward direction. There were no differences between stances for the left, right, and backward directions for RT. For the MT, open stance was faster than the closed stance in a backward direction. The closed stance was significantly faster than the open stance for MT in a left and right direction. No significant difference was indicated between stances for MT in a forward direction. No relationship was shown between strength and the RT and MT variables.

297 SMITH, Alan J. *Generality vs. specificity of performance in similar throwing tasks with projectiles of varying weights and sizes.* Ed.D. in Physical Education, 1972. 147 p. (W. D. Loockerman)
Speed throwing tasks were performed by 61 college males and 60 college females using sidearm, overarm, and underarm patterns while throwing balls of 3 different sizes (baseball, softball, basketball), each size having 2 different weights. Accuracy throwing tasks were performed by 120 male and 120 female college students using the same projectiles and a concentric circle target. Criterion score was the M of the last 5 of 7 trials. Intercorrelations indicated a general speed factor in the overarm and sidearm tasks but not the underarm. No general accuracy factor was found. ANOVA revealed differences ($p < .05$) in throwing speeds only when the wt. of each ball was increased 100% or more, but changes in the size of the balls did not result in speed differences.

University of Oregon, Eugene, Oregon (M. L. Puthoff)

298 HEALY, Thomas R. *The effect of need achievement and task difficulty on competitive and noncompetitive motor performance.* M.S. in Education, 1972. (D. M. Landers)
The effect of need achievement and task difficulty on motor performance in a high competitive and low competitive situation was investigated. Tendency to achieve success (Ts) Ss (N=60) and tendency to avoid failure (Tf) Ss (N=60) (selected by the Cowen Test Anxiety Questionnaire and the Lynn Test of Achievement) performed a lateral balancing task of either low, moderate, or high level difficulty in either a competitive or noncompetitive situation. Each S had 6 trials on a stabilometer. The results of ANOVA on performance scores showed no differences. The ANOVA on intravariance showed that Ts Ss had better performance consistency in a competitive situation than Tf Ss, and Tf Ss had better performance consistency than Ts Ss while in a noncompetitive situation. This study found no evidence to support the hypotheses that Ts Ss perform at their best on a task of intermediate difficulty and Tf Ss perform their poorest on a task of intermediate difficulty.

North Carolina Central University (R. E. Townes)

299 CORBETT, Doris R. *Personal distance between black and white females participating in physical education at three integrated high schools in Bladen County.* M.S. in Physical Education, 1972. 58 p. (P. E. Townes)
The Cowell Personal Distance Ballot was administered to 118 black and 106 white JHS Ss blacks accepted whites, and whites accepted blacks "into my class at school." Blacks accepted blacks, and whites accepted whites "as a member of my "gang" or club." In one segment, blacks accepted whites "into my class at school," while whites accepted blacks "on my street as a next door neighbor." The difference between the personal distance at which blacks accepted blacks, and blacks accepted whites was at the .01 level of confidence. The difference between the personal distance at which whites accepted blacks was at the .01 level of confidence.

300 PARHAM, Jeannette V. *The social distance between black and white students at Elm City High School.* M.S. in Physical Education, 1972. 42 p. (R. E. Townes)
The Cowell Personal Distance Ballot was administered to 100 white and 100 black JHS and SHS students. The personal distance of black Ss from black athletes, and white Ss from white athletes was "as a member of my gang." The personal distance of black Ss from white athletes, and white Ss from black athletes was "into my class at school." The difference between the personal distance at which black Ss accepted black athletes, and black Ss accepted white Ss was at the .01 level of confidence. The difference between the personal distance at which white Ss accepted white athletes, and white Ss accepted black athletes was also significant at the .01 level of confidence. These JHS and SHS Ss accepted athletes of the opposite race on a "personal" rather than a "residential" contact basis.

301 PATTERSON, Gregory T. *A comparative study of the performance of black students in beginning swimming using the Red Cross method and the Silvia method.* M.S. in Physical Education, 1972. 34 p. (R. E. Townes)
Two samples of 20 black male and female beginning swimmers were taught by the Red Cross method and the Silvia method, respectively. Each sample received instruction for 10 lessons of 35 min. each. The front crawl stroke, back crawl stroke, and survival time were the factors tested after the period of instruction. The M for the Red Cross sample using the front crawl stroke 36.8, and the M of the Silvia sample was 47.9. The M for the Red Cross sample using the back crawl stroke was 13.4, and the M of the Silvia sample was 22.3. The M for the Red Cross sample in survival time was 86.05, and the M of the Silvia sample was 173.95. There was not a difference between the 2 samples using

the front crawl stroke. The Silvia sample was superior to the Red Cross sample on the back crawl stroke and survival time, the differences being at the .02 and .05 levels, respectively.

North Texas State University, Denton, Texas (J. E. Douthitt)

302. BATEMAN, Judith L. *Effect of trampoline training and tumbling on the cardiovascular efficiency of college women.* M.S. in Physical Education, 1972. 110 p. (C. George)

College women (N = 32) between ages of 17 and 25 were assigned to 1 of 3 treatment groups. All groups participated in regular tumbling classes 3 days/wk for 6 wk. Two of the groups trained on the trampoline for 5 and 10 min/day, respectively, in addition to the tumbling participation. Ss (N = 9) who were not enrolled in activity classes served as a control. Ss were tested on the Astrand test, Cooper test, resting HR, resting blood pressure, and recovery HR during the 2 wk. preceding and following the training period. No significant r was found between the Astrand and Cooper tests, the t indicated increases ($p < .01$) in cardiovascular efficiency between pre- and posttests for trampoline groups. ANCOVA for Astrand test revealed $p < .05$ between trampoline groups and tumbling and control groups. No difference was found between trampoline groups. ANCOVA revealed $p > .05$ between Cooper test and other cardiovascular measures. Trampoline training was beneficial in increasing cardiovascular efficiency.

303. BENNINGTON, Gary L. *The personality characteristics of high school male gymnasts.* M.S. in Physical Education, 1972. 44 p. (D. C. Bailey)

Male high school Ss (N = 90) were administered the Cattell Jr.-Sr. High School Personality Questionnaire. Ss were selected in such a manner that 30 were gymnasts, 30 were football players, and 30 did not participate in organized athletics. ANOVA was utilized to determine whether differences existed between scores for the groups on each of 14 personality factors. The scores for gymnastics and football groups were higher ($p < .01$) than were the scores for the nonathletic group in intelligence. The groups were not different on 13 of the 14 personality factors.

304. GRIDER, Sandra D. *Understanding sexuality: A guide to better family living.* M.S. in Education, 1972. 445 p. (D. Casey)

Material compiled during research of 166 books, periodicals, unpublished papers, pamphlets, and newspaper articles was organized in such a manner that it could be used in lieu of a textbook for a course in family living at the SHS level. Each of the 17 chapters includes a list of vocabulary words, questions, suggested readings, and references pertinent to material in the chapter.

305. HOOK, Margaret A. *A comparison of the objectives of physical education at North Texas State University.* M.S. in Physical Education, 1972. 69 p. (S. Rice)

PE objectives suggested by Rosentsweig were ranked by women faculty, men faculty, women majors (N = 101), and women nonmajors (N = 100) at North Texas. Analysis of data included computation of r to determine relationships between rankings, and computation of coefficients of alienation and of forecasting efficiency to determine predictability. None of the relationships were great enough to have value for predictive purposes. It was concluded that groups were independent in their ranking of the objectives.

306. LEACH, Edward L. *The effect of an eight-week weight training program upon leg strength and running speed in middle-school-age boys.* M.S. in Physical Education, 1972. 45 p. (J. E. Douthitt)

Boys from a middle school (N = 50) (ages 11-15), divided into 2 groups so that each group had an equal number of Ss from each age, participated in an 8-wk. program. The exp. group participated 3 days/wk in a wt. training program designed to develop leg strength while the control group participated in the regular PE class. Leg strength was measured using the leg and back dynamometer with a belt and running speed was time in the 50 yd. dash. All Ss were tested at the beginning and end of the 8-wk. period. ANCOVA indicated that at the end of the period the exp. group was superior ($p < .05$) in leg strength but there was no difference between M for the groups in running speed.

307. PAYNE, Martha S. *The construction of a volley test for aerial tennis.* M.S. in Physical Education, 1972. 54 p. (S. Rice)

College women (N = 35) enrolled in 2 beginning aerial tennis classes were administered the wall volley test after 6 hr. of instruction. Following the initial test, a round robin tournament was conducted in each of the classes and the volley test was administered again. To determine reliability an r of .83 was computed using the even and odd trials on the posttest. With the Spearman-Brown prophecy the r increased to .91. Validity was determined by correlating percentage of wins in the tournament with posttest scores. Validity coefficients were computed for each class separately. For 1 class (N = 15) the r of .58 was

($p < .05$) but not of predictive value, while for the other (N = 13) the r of .81 was ($p < .01$) and high enough to have value for predictive purposes.

308. **STRICKLIN, Judith K.** *Attitudes of junior high school female athletes and non-athletes toward physical education.* M.S. in Physical Education, 1972. 60 p. (I. Caton)

The Wear PEAI was administered to 725 JHS girls. Data collected on a background information sheet Ss were classified as athletes or nonathletes. Due to adherence to criteria established for matching Ss scores from 198 Ss were analyzed. Scores were so organized that comparisons could be made between grade levels as well as between athletes and nonathletes. ANOVA and Tukey's HSD Test were utilized. Results revealed that attitudes of female athletes were more favorable toward PE ($p < .05$) than those of nonathletes and the attitudes of 8th grade Ss were more favorable ($p < .05$) than were attitudes of Ss in 7th grade.

309. **WHITELEY, Harold L.** *Strength and flexibility gains in supplementary weight training programs using two different weight training apparatus.* M.S. in Physical Education, 1972. 50 p. (D. C. Bailey)

SHS boys (N = 30) were divided into 3 groups that were equated according to scores on the McCloy C. I. All Ss participated in track and field during the 6-wk. period. One exp. group used the Super-Mini-Gym and the other used the Exer-Genie on 3 days/wk performing the leg press, curls, and bench press. The number of sets and reps. were the same for both groups throughout the study. All Ss were tested for strength and flexibility at the beginning and at the end of the 6-wk. period. The Strength Index (SI) included leg strength, rt. grip strength, dip strength, and chinning. Flexibility of right and left hip, knee, shoulder, and elbow joints was measured. ANCOVA revealed that gains in scores by the Exer-Genie group in grip strength and dip strength were greater ($p < .05$) than were gains for each of the other groups. SI gains for the Exer-Genie group were greater ($p < .05$) than for the control. For flexibility measures there were no differences between any of the groups that were great enough to be significant.

University of Northern Colorado, Greeley, Colorado (D. A. Phillips)

310. **ROITMAN, Jeffrey L.** *The chronic and acute effects of exercise upon the red cell content of 2,3-diphosphoglycerate.* Ed.D. in Physical Education, 1972. 71 p. (D. A. Phillips)

After an underdistance and an overdistance training session in 9 cross country runners 2,3-DPG was measured. Chronic effects of training were assessed by taking 2,3-DPG measurements during the preseason, the postseason, and after a period of detraining. Significant differences in sample M were reported. The differences reported for acute exercise conditions seemed to be more consistent and greater than the differences reported for chronic effects.

Northern Illinois University, DeKalb, Illinois (M. N. Zimmerman)

311. **FRANKENREIDER, Nikki R.** *The effect of a program of neuro-muscular reconditioning on the body alignment of pre-school children.* M.S. in Physical Education, 1972. 98 p. (E. Lane)

The body alignment of 29 preschool children was measured by the alignometer. Each of 3 groups received a different program of neuromuscular reconditioning. Data were analyzed via ANCOVA. The program designed to employ visual imagery produced significant changes in the pelvis and feet.

The Ohio State University, Columbus, Ohio (D. K. Mathews)

312. **BECKER, John Emil.** *The history of the Minnesota Intercollegiate Athletic Conference 1920-1970.* Ph.D. in Physical Education, 1971. 143 p. (B. L. Bennett)

The M.I.A.C. has existed as an athletic conference since 1920 and can trace its roots into the 1870's when athletic competition was initiated between member schools. During the early years the conference experienced crises which threatened to terminate its existence. But neither internal crises (such as member schools resigning) or external crises (such as the Depression) could stifle its growth. After 50 years, the M.I.A.C. stands at the strongest point in its history. It can be considered as a successful conference in terms of athletic competition with other conferences and in terms of achieving the goals set by its founders. One of the primary goals was that this conference would economically serve its member schools. Two characteristics which permit the conference to function frugally are the lack of strong central administration and the absence of athletic scholarships.

313. **BEDECKI, Thomas.** *Modern sport as an instrument of national policy with reference to Canada and selected countries.* Ph.D. in Physical Education, 1971. 205 p. (B. L. Bennett)

This study investigated government involvement in sport of selected countries with reference to an international sports policy for Canadians. Several hypotheses were examined. The central thread was that nationalistic elements in international competitive sport are more strongly represented in unitary or totalitarian countries than in decentralized established democracies. Investigative procedures were: A review of the literature; the use of a questionnaire on the type and scope of government involvement; and the author's study-interview-travel with knowledgeable domestic and international individuals. It is concluded that the expansion of international sport participation by a number of countries is related to the political emphasis and related government involvement policy. Strong central governments have utilized sport as an instrument for the achievement of national goals.

The Ohio State University, Columbus, Ohio (R. L. Bartels)

314. COLBY, Marilyn F. *The amount of information feedback essential to error correction in putting.* Ph.D. in Physical Education, 1971. 111 p. (L. D. Morris)

Four exp. groups were deprived of visual information feedback during putting, although all experienced TIF. Evidence indicated that reduced visual information feedback resulted in inability to formulate a reference. This was reflected in performances.

The Ohio State University, Columbus, Ohio (D. K. Mathews)

315. COURSEY, Leon. *The Life of Edwin Bancroft Henderson and his contributions to physical education.* Ph.D. in Physical Education, 1971. 371 p. (B. L. Bennett)

Information was obtained from personal interviews with Mr. Henderson, members of his family, former professional colleagues, former students, former classmates, religious associates, and other acquaintances; and professional and other writings by Mr. Henderson. Reports, minutes of meetings and relevant literature (i.e., Edwin Bancroft Henderson Papers, Moorland-Spingarn Collection, Howard University Library) were also used. A glance at Mr. Henderson's professional career—a 50-yr. period—reveals that he was a teacher, coach, organizer of competitive athletic leagues, and officiating organizations, supervisor and chief PE administrator of the Washington, D.C.'s black school system. He is the first black physical educator to be accorded an Honor Fellow of the AAHPER.

The Ohio State University, Columbus, Ohio (R. L. Bartels)

316. CRANFORD, Mary L. *Blood lactate concentrations in female athletes performing various types and intensities of work.* Ph.D. in Physical Education, 1972. 91 p. (R. Bartels)

Blood lactate concentration, HR, VO_2, pulmonary ventilation, and workload were measured and/or predicted as female athletes performed various types and intensities of work. Blood lactate production was found to be a better method of assessing the strenuousness of physical activity than was HR. On the basis of lactate production, women's intercollegiate basketball involves moderate to heavy work.

317. DOCHERTY, Ethel M. *The effects of reducing and masking the auditory cues accompanying performance of select gross motor tasks on the performance of those tasks.* Ph.D. in Physical Education, 1972. 176 p. (M. Mordy)

The purpose of the study was to determine the importance of auditory cues accompanying the performances of a wall rally task and a game-like task upon the performances of those tasks at the skilled performer level. Varsity tennis players (N = 18) performed under controlled, reduced, and masked sound conditions. Results showed no differences between sound conditions and suggest that auditory cues have a relatively unimportant effect on performance.

318. EVANS, Jane R. *A comparison of the synchronous, rhythmic motor, and spontaneous rhythmic movement of educable mentally retarded and normal children.* Ph.D. in Physical Education, 1972. 243 p. (D. Morris)

Multivariate ANOVA performed on Lincoln-Oseretsky items measuring synchrony and a test of auditory motor rhythm indicated no difference between the performance of retarded and normal children of comparable CA. Similar responses in a nondirected situation indicated that spontaneous movement is a function of factors other than intelligence or sex.

319. FISHER, A. Craig. *The relationship between participation in selected sport activities and sex role orientation of institutionalized males.* Ph.D. in Physical Education, 1970. 120 p. (C. Mand)

Six institutionalized males, 10 to 13 yr. old, participated in a structured 6-wk. program of self-conceived masculine sports. The purpose was to ascertain the relationship between sport participation and sex role orientation. Four of the 6 Ss revealed increments toward masculinity as measured by the *Terman-Miles Attitude-Interest Analysis Test.*

320. GOULDING, David V. *Prediction of exercise cardiac output from resting supine stroke volume and exercise heart rate using a CO_2 rebreathing technique.* Ph.D. in Physical Education, 1972. 115 p. (E. Fox and D. Mathews)

Cardiac output was measured on 8 male Ss at rest and exercise using a CO_2 rebreathing technique. Measured values were compared to predicted values derived from resting supine stroke volume and exercise HR. Relative contributions of HR and SV to cardiac output during exercise were examined.

The Ohio State University, Columbus, Ohio (D. K. Mathews)

321. GRICE, John William. *The history of the Ohio Association for health, physical education and recreation.* Ph.D. in Physical Education, 1971. 240 p. (B. L. Bennett)

This study traces the growth and development of the OAHPER from 1895 through 1969. The study emphasizes the roles played by many Ohio physical educators and points out the close relationship between the State Supervisor of PE, the Ohio HS Athletic Association and the OAHPER. The association's major achievements were: increased membership which led to Ohio being the largest state association in 1939, development of official publication, organized elementary school workshops and originated meritorious awards which recognized special achievement of physical educators. The study also includes a comparison of the Ohio association with Florida, Illinois, North Carolina, and Virginia associations.

322. HIRCOCK, Charles H. *Charlie Hayse Foster: His life and contributions to physical education, athletics, and students.* Ph.D. in Physical Education, 1971. 326 p. (B. L. Bennett)

This study documents Foster's career as a teacher, organizer, athletic coach, and administrator on both the HS and college level.

323. HIRSCH, Christine. *Self-confrontation and the effect of focused feedback on change in expressed movement satisfaction.* Ph.D. in Physical Education, 1972. 74 p. (M. Mordy)

Investigated was the effect of level of movement cathexis and self-confrontation on change in expressed movement satisfaction of college women (N=165). The study employed a 3 × 4 factorial arrangement with high, average, and low movement cathexis and 4 videotape self-confrontation procedures. Movement cathexis was measured by Nelson and Allen's Scale for the Appraisal of Movement Satisfaction. Following the videotape self-confrontation procedures, the discrepancy scores between the pretest and *t* the posttest were submitted to ANOVA. The results indicated no difference among the self-confrontation procedures. However, among the movement cathexis levels, the Newman-Keuls posteriori multiple comparisons test revealed that the low movement cathexis group had a different positive change ($p > .01$) from both the average and the high movement cathexis groups.

The Ohio State University, Columbus, Ohio (R. L. Bartels)

324. JEPPSON, Gordon D. *An analysis of the involvement of head football coaches in the physical education professional preparation program in selected American colleges and universities.* Ph.D. in Physical Education, 1972. 180 p. (L. Hess)

This research was an attempt to determine the status and role of the head football coach in the PE dept. of his univ. Opinions were elicited from the head football coaches and PE dept. chairmen as to the feasibility of having the head football coach involved in the PE professional preparation program.

325. KAHRS, Karol A. *The relationship of mental image to skill performance in tennis.* Ph.D. in Physical Education, 1972. 142 p. (M. Mordy)

The purpose of this investigation was to determine the relationship between mental image and skill performance of the forehand drive of women students enrolled in beginning tennis classes. A comparison was also made of mental image and skill performance to determine if they were the same or different. Findings of the study indicate a significant relationship between mental image and skill performance.

326. LABRECQUE, Beverly M. *An alternative to traditional athletic competition with special reference to figure skating.* Ph.D. in Physical Education, 1972. 121 p. (S. Kleinman)

The purpose of this investigation was to explore theoretically the relationship of competitive athletics to the counter-culture with specific reference to figure skating. An alternative model to traditional figure skating competition was designed in an attempt to construct a framework which would allow the basic premises of the counter-culture to operate.

327. MAURER, Bruce L. *A multivariate analysis of student, faculty and administrators' attitudes toward the Division of University Recreation and Intramural Sports at The Ohio State University.* Ph.D. in Physical Education, 1972. 123 p. (M. Mordy)

A form of the semantic differential was utilized to assess the attitudes of students, faculty, and administrators. The results indicated that the 3 groups had favorable attitudes toward the program, leadership, and facility factors. Univ. attitudes toward a new REC building, when ranked against "other" campus constructions, were also favorable.

328. MORIARTY, Richard J. *The organizational history of the Canadian Intercollegiate Athletic Union (CIAUC) 1906-1955.* Ph.D. in Physical Education, 1971. 381 p. (L. Hess and C. Hixson)

Using a conceptual model this study analyzed the growth and development of Canada's oldest and most renowned athletic association. The study includes identification of events, men, and trends (by the Merton Focused Interview), and presentation of trend groups for geography, membership, representation, sports, and finances (through Omnitab computer analysis). Problems are digested in a 3-dimensional diagram and decision trees. This study supports the research approach of Stogdill and Halpin as a viable instrument for analysis of an athletic association and substantiates the theory of Katz and Kahn, and Stogdill which suggests organizations pass through identifiable stages with cycles of conflict.

329. SCHREIBER, Mary L. *Anaerobic capacity as a function of somatotype and participation in varsity athletics.* Ph.D. in Physical Education, 1971. 58 p. (R. Bartels)

The results of this study indicated that participation in particular varsity sports was related to improvement in anaerobic capacity, although it was not related to improvement in aerobic capacity. Although all somatotypes improved in anaerobic capacity as a result of training, mesomorphs and ectomorphs had the highest indigenous anaerobic capacities.

330. SOARES, Patricia L. *An investigation of attitudes expressed toward the DGWS Philosophy and Standards of Competition for high school girls.* Ph.D. in Physical Education, 1972. 160 p. (L. Hess)

This study consists of the development and administration of an attitude scale to measure the DGWS Philosophy and Standards of Competition for HS girls. The majority of the standards received endorsement from physical educators while 8 were disapproved.

331. BORREVIK, Berge A. *The construction of an organizational climate description questionnaire for academic departments in colleges and universities.* Ph.D. in Physical Education, 1972. 145 p. (A. Esslinger)

This investigation was modeled after Halpin and Croft's study of ELE school climate. Data were obtained from the faculty members of 72 academic depts. in 12 Pacific Northwest institutions. A principle component factor analysis identified 6 domains which pervaded the organizational climate of the depts. sampled. Validation of the instrument was accomplished through use of construct validity and cross-validational techniques. Factor analysis of the subtest scores for the 6 domains allowed for a 3 factor solution to be accepted for the analysis at the dept. level. To analyze dept. climates double standardized subtest scores were calculated. The M profile of scores of selected depts. within each group was used to describe the organizational climate which provided models for the identified climate. The findings of this investigation were that: the OCDQ-HE is a valid instrument to assess the organizational climate of academic depts.; and the consolidation in this investigation in higher education is of the same factors found in the original study.

332. CARRE, Frank A. *Effect of imitative learning and augmented feedback on the initial stages of learning a novel complex motor skill.* Ph.D. in Physical Education, 1972. 89 p. (J. D. Adler)

Ss (N = 144) were assigned to one of 12 exp. treatments resulting from a 3 × 4 model—feedback paradigm. The 3 model conditions consisted of a control group, film-loop model, and live model; the 4 augmented feedback conditions consisted of a control group, videotape replay condition, instructor-assistance condition, and a combination of videotape replay and instructor-assistance. Each S practiced the discus turn and throw individually over 5 days. Pretest and posttest measures of form and distance were used to evaluate performance and the effect of form on distance. Analysis indicated there was no evidence to support the use of any particular model or augmented feedback condition as the critical variable in the initial stages of learning a novel complex motor skill. However, a relationship was found between the performance measures of form and distance.

333. DAVIS, Lorraine G. Moe. *An evaluation and development of curricula for the preparation of health educators.* Ph.D. in Health Education, 1972. 211 p. (R. E. Kime)

The purpose of this study was to examine and evaluate a HE curriculum by having graduates evaluate courses, evaluate their preparation, and rate the importance of desired competencies. A 3-part survey instrument was developed and mailed to all graduates with major preparations in HE from the Univ. of Oregon from 1967-71. Analysis was made by calculating percentages of the respondents indicating their preferences, opinions, and evaluations of each of the statements of responses on the questionnaire. The graduates of the HE program at the Univ. of Oregon felt adequately prepared to be health educators, with the school health educators feeling more competent than those employed in community health positions. Recommendations were made to increase the exposure to community health by incorporating such emphasis into every course. Thorough preparations in administrative techniques and organizational development were determined to be imperative. A recommendation is made for required practicum experiences for every potential health educator.

334. FERRIS, Blake F. *Effects of eccentric and concentric-eccentric contractions on measures of static strength, dynamic strength, and relative muscular endurance.* Ed.D. in Physical Education, 1972. 79 p. (E. P. Wooten)

The static and dynamic knee flexion strength as well as the 40, 50, and 60% relative static and dynamic knee flexion endurance of 28 male PE majors, 19 to 23 yr. of age were assessed prior to and following an 8-wk. training program. Ss were assigned to 2 groups who trained using either eccentric or concentric-eccentric contractions and followed DeLorme's 3 set, 10 repetition, 3 times/wk progressive resistance exercise routine. The only effects of either program occurred on 5 of the 6 measures of relative static endurance. Eccentric contractions training and concentric-eccentric contractions training did not differ from each other in producing changes on knee flexion measures of static strength, dynamic strength, and static and dynamic relative muscular endurance.

335. JORDAN, Jack A. *A study of the relationships between the personal health attitudes of older employees and retirees, and certain physical, psychological and socioeconomic factors.* D.Ed. in Health Education, 1972. 181 p. (R. E. Kime)

Twenty-six factors, making up 7 major areas of influence, were correlated with the health attitudes of 416 retirees, while 14 factors, making up 4 major areas of influence, were correlated with the health attitudes of 232 older employees in southern California. The ages of the older workers ranged from 60 to 65, while the retirees ranged from 66 to 70 yr. Twenty-three questions and 11 scales were used to collect the data. The health attitudes of retirees were related to: Financial status, 5 of the 6 factors were $p < .05$; Health status, all 5 factors were $p < .05$; Previous employee relations, 5 of 6 factors $p < .05$; Retirement resistance, 2 of 3 factors $p < .05$; Retirement activities, 1 of 2 factors $p < .05$. The health attitudes of older employees were related to Employee relations, 3 of 6 factors $p < .05$; Retirement planning, 1 of 2 factors $p < .05$. No relationship was found between a retirees' health attitudes and his retirement planning or his marital status and permanency of residence, or between older employees' health attitudes and their financial status or retirement resistance.

University of Oregon, Eugene, Oregon (E. R. Reuter)

336. KERR, Robert. *An analysis of the fine motor performance of children aged five, seven and nine years, and the relationship of this performance with skeletal age.* Ph.D. in Physical Education, 1972. 83 p. (E. P. Wooten)

This study investigated the relationship between the performance of a fine motor task and physical maturity as measured by skeletal age. A reciprocal tapping task, performed by tapping with a dart between pairs of targets drawn on paper was used, the task being varied along the 2 parameters of target width and movement amplitude. A 2nd purpose was to analyze the performance of the fine motor task and its relation to the age and sex of the Ss. Boys and girls (ages 5, 7, and 9) (N=60) attending private day care centers and ELE schools in the Eugene-Springfield, Oregon, area, served as Ss. Correlations relating skeletal age to the fine motor task were not significant. There were no differences between the sexes in the performance of the fine motor task. However, the differences in the performance of the 3 age groups suggests that the reduction of M MT with age results mainly from a reduction in the time spent on target; i.e., an increased ability to plan a 2nd movement while still performing the 1st.

337. LAUDIE, Drew T. *Comparison of leader-directed play versus informal supervised free-play at the preschool age level.* Ed.D. in Recreation and Park Management, 1972. 141 p. (R. P. Raus)

The purpose of this study was to determine if the rate of specific play behaviors of preschool children in a short-term, leader-directed play situation differs from the rate of these behaviors as exhibited in an informal supervised free-play situation. Ss (N=40) were preschool children. Their play behaviors were recorded for a 10-min. period each day for 15 days. Ss (N=20) received instruction from a leader during 5 of the 15 days. The data were analyzed 3 ways: trend estimation, ANOVA, and a study of individual cases. The following conclusions are offered: The rate of specific play behaviors of preschool children in a leader directed play situation did not differ from the rate of these behaviors by children in an informal supervised free-play situation; children react differently to leader direction, hence, effective interaction between leader and participant should begin by determining the reaction of the child to the instruction; the peer group influence appeared to be dominant over the influence of the leader; and daily records of the play behaviors of children can be an aid in defining and assessing the contents of the interactions between leader-child.

338. LORANGER, Peter D. *An analysis of problem drinkers undergoing treatment through educational therapy, group therapy and family orientation.* Ph.D. in Health Education, 1972. 110 p. (R. G. Schlaadt)

Purposes of this study were: to assess the problem drinker's educational knowledge of alcohol; to examine the subjective evaluations of the problem drinker made by himself and the attending group leader; and to analyze which of the proposed method or methods of treatment (didactic educational therapy, and/or group therapy and family orientation, and/or didactic educational therapy, group therapy, and family orientation) seemed to be the most beneficial in treating the problem drinker. The treatment groups used in this study were randomly selected; however, the convicted problem drinkers were placed in the group pertaining to the month of their sentencing to the clinic. The findings of this study indicated that an increase in knowledge about alcohol was apparent after the 4th, 9th, and 13th weeks of testing, between each of the respective treatment groups' M test scores. In response to the evaluation instrument, several of the problem drinkers differed with their attending group therapist as to specific categories proposed for self-evaluation. Finally, the choice of education as the most prominent preventive and rehabilitative measure was quite strongly indicated by the problem drinker.

339. MICHAEL, Robert E. *An evaluation of the attitudes toward physical activity of male alumni of Oregon State University.* Ed.D. in Physical Education, 1972. 259 p. (E. R. Reuter)

A multiple discriminate analysis of 240 replies to a mailed physical activity questionnaire and the Kenyon attitude inventory found a significant difference between groups in 1 or more of the domains in Kenyon's inventory within the factors: participation in PE beyond the requirement, PE grades, number of physical activities participated in while at Oregon State Univ., amount of present participation in physical activity, attitude toward PE requirement, general attitude toward PE, highest level of physical activity participation, type of PE classes selected, academic study area, graduation year, occupation. No significant difference between groups was found for the factors: amount of carry-over of PE classes, age, and method of response to the questionnaire groups. The hypothesis that there was not a difference between general and specific attitudes toward physical activity was held tenable for total Kenyon, the health and fitness, and ascetic experience domains; and rejected for social experience, pursuit of vertigo, and aesthetic experience domains. Additional information received from the respondents included: 90% favored a PE requirement, 60% reported carry-over of univ. PE activities, and over 70% favored requirement of carry-over activities.

340. MOORE, Robert J. *An electromyographic analysis of the action of therapeutic cold on neuromuscular fatigue.* Ph.D. in Physical Education, 1972. 80 p. (C. Brubaker)

Male subjects (N=18) were required to perform sustained isometric contractions against a hydraulic dynamometer with the nondominate elbow flexor muscle group for a period of 100 sec. under 4 exp. conditions. The conditions were: 30% of max voluntary contraction (MVC) following a 5 min. ice massage treatment to the elbow flexor muscles; 50% of MVC following ice treatment; 30% of MVC, no ice treatment; and 50% of MVC, no ice treatment. A 2 × 2 randomized block factorial design for repeated measures was employed. The rate and amount of neuromuscular fatigue was measured by integrated electromyography as muscle action potentials (MAPs). Intramuscular temp. (IM) was recorded at a depth of 2 cm. using fine wire thermocouples. The MFRs at both stress levels decreased following cold application. The grand M MAP for the 50% MVC level decreased due to cold, while that of the 30% MVC level increased. The cold application caused an average IM temp. decrease of the 16°C at the end of the cooling period. This was below a critical level (i.e., 25°C) for optimal performance of sustained muscular contractions. As the duration of contraction progressed the IM temp. reapproached the critical temp. causing the grand M MAPs to level off or decrease. ANOVA was ($p > .05$) for the interaction effect of the cold and stress for the grand M MAPs. ANOVA difference between MFRs were not significant $(p > .05)$.

341. **MOSES, Robson.** *Effect of yoga on flexibility and respiratory measures of vital capacity and breath holding time.* D.Ed. in Physical Education, 1972. 132 p. (E. R. Reuter)

Four flexibility measures, 4 variations of breath holding, vital capacity, and an attitude questionnaire about the activity were administered to 27 male students at the beginning and end of a 10-wk. yoga PE class. The changes in these measurements were compared to an equal number of students drawn at random from a variety of other PE classes. ANCOVA showed that the yoga students made greater increases than the nonyoga group in hip, hip and trunk, and neck flexibility; in 3 of the 4 variations of breath holding, and in vital capacity. The results of the attitude questionnaire indicated that yoga students had a more positive attitude about the benefits of yoga than the nonyoga students had about the activities in which they were enrolled. There was no difference between the groups in the changes on ankle flexibility or breathing holding after full normal inhalation.

342. **ROBERTSON, Bobby L.** *The effects of varying feedback on learning a fine and a gross motor skill.* Ed.D. in Physical Education, 1972. 92 p. (J. D. Adler)

Four varying feedback groups with a total of 72 male Ss at the Univ. of Oregon were used to determine if there is a difference in the effects of varying feedback on the learning of a fine and a gross motor skill. The gross motor skill test used was the AAHPER volleyball test. The fine motor skill involved a device in which the subject attempted to move a steel ball uphill by manipulating 2 metal rods. In the gross motor skill feedback provided during trials or on an individual basis immediately following trials resulted in better performance when compared with no augmented feedback. Results for the fine motor skill were similar to those of the gross motor skill. Significance was obtained for the same groups: the individual terminal group was better than the intrinsic group and the intrinsic groups and group terminal were significantly lower than the concurrent. However, one additional difference was significant: the individual terminal group performed better than the group terminal group. The effects of exp. factors on the feedback groups remained the same for both fine and gross skills with no interaction existing.

The Pennsylvania State University (E. A. Gross)

343. **ALEXANDER, Vernon Victor.** *Recreation participation patterns for residents of Leisure Village Retirement Community, Lakewood, New Jersey.* M.Ed. in Recreation and Parks, 1972. 130 p. (F. Humphrey)

Residents (N=62) of a retirement community in New Jersey returned a mail questionnaire. Efforts were made to determine the participation pattern prior to entering the retirement community and then present patterns within the retirement community. In addition to determining the specific activities participated in, the frequency of such participation and location (within or outside the retirement community limits) were ascertained. Selected demographic characteristics also were assessed in relationship to participation. It was concluded that there was no major change in recreation behavior evidenced by the residents in their past and present activity participation patterns. On the whole there was slight change from individual participation prior to becoming a resident of the retirement community to a more group-oriented pattern. For the most part, the same activities participated in prior to residency were continued within the retirement community.

344. **ARTHUR, Joanne.** *Biomechanical analysis of the pike surface dive.* M.S. in Physical Education, 1972. 79 p. (H. M. Lundegren)

Cinematographic techniques were used to analyze and compare the basic mechanics employed by 6 swimmers of varying levels of ability in the execution of the pike surface dive. Selected biomechanical factors were investigated to determine differences in execution patterns for the "average," "above average," and "superior" performer. Two cameras were used to film the above-water and underwater action simultaneously to facilitate analysis of the entire skill. Results indicated that certain biomechanical factors did distinguish levels of ability in performing the pike surface dive. Variables of time, body positioning in the front layout, inverted pike, inverted vertical, and upon submersion, the angular displacement patterns throughout the movement were related to the quality of performance of this skill. The "superior" performers took longer to execute each phase of the movement, exhibited greater body control, achieved more ht. on the leg lift, and executed the surface dive in a more stationary position than the poorer performers. Mechanics of the arm movements were inconsistent among Ss, although the "superior" performers used sculling movements more frequently than did the less capable performers.

345. **BAKER, Diane Kay.** *Discretionary time behavior in relationship to participation in a recreation*

counseling program. M.Ed. in Recreation and Parks, 1972. 203 p. (F. Humphrey)

Ss (N=7) were selected from the Day Program participants at a psychiatric institute. All persons were at a functional level to warrant discharge planning. A REC counseling program was developed which utilized a client-centered approach with the participants. It consisted of educational discussions and activity projects concerning individual interests and variables of activity feasibility in utilization of discretionary time in the community. The program goal was to foster individual and group development in socialization and self-initiated decisions relative to discretionary time through education for leisure. The program was conducted 2 times per week for a total of 5 wk. based on the effectiveness of the program as related to the participants in a psychiatrically oriented Day Treatment Program. The REC counseling program had positive changes including individual and group growth in the areas of social interaction and self-initiated decisions related to discretionary time involvement, more effective verbalization of interest and problem areas related to discretionary time behavior, more effective evaluation of discretionary time interests and identification of alternatives, and more effective selection from among alternative patterns and the implementation of the alternative through an actionable experience.

346. **BECKER, Sherrie L.** *An evaluation of the effects of a game and activity program upon observed socialization patterns of aging residents of a state psychiatric hospital.* M.Ed. in Recreation and Parks, 1972. 117 p. (F. Humphrey)

Ten Ss were selected from the residents of the geriatric unit of Norristown State Hospital. All Ss were age 65 or older and ambulatory. In group 1 were 5 females who voluntarily participated in a game and social activities program for approximately 45 min., 3 times a wk., for a period of 5 wk. Group 2 was comprised of 3 females and 2 males who received no such program, but merely continued to follow their usual daily treatment routines. Although the activity program was not administered to group 2, an equivalent period of time was spent conversing with the members of this group. Ss were analyzed both prior to, and during, the game and activity program by means of daily and weekly behavioral rating scales. Ms, which were computed weekly on both scales, made it possible to analyze the changes which occurred on both the individual and the group levels. The exp. program was found to be an effective means of increasing positive social interaction, and thereby improving socialization among aged, psychiatric patients. This increase in socialization within the activity setting was strong enough to have some carry-over value to behavior outside the program situation. Minimal improvement in socialization was observed among the members of the no-program group.

347. **BRESLER, Marlys Ann.** *A survey of the training programs used and the injuries occurring with girls' interscholastic field hockey players.* M.Ed. in Physical Education, 1972. 64 p. (H. M. Lundegren)

SHSs (N=83) were asked to participate in a questionnaire survey, 51 completed the form. The findings were: hockey coaches were adequately prepared in the areas of athletic training and conditioning; 39 schools offered some type of preseason conditioning program, there were 154 total injuries with an average of 3 injuries per team; the ball and stick caused 53% (81) injuries; ankle injuries were most frequent (17% or 26); the majority of injuries (66% or 101) occurred in practice; defensive players sustained more injuries (55% or 85); and hockey programs were most often inadequate in the areas of wt. training, distance running, and sprints.

348. **BRUGEL, Barbara A.** *The self concept of eight and nine year old boys participating in a competitive baseball league.* M.Ed. in Physical Education, 1972. 70 p. (H. M. Lundegren)

Eight and 9 yr. old boys (N=48) participating in the Nittany Valley Little League C Division were administered the Piers-Harris Children's Self Concept Scale at the beginning and end of 1 season of play. The Ss were grouped according to age, amount of experience, percentage of participation, and level of skill. The 8 yr. old group evidenced a change in a positive direction in self-concept, as measured by the P-HCSCS, over a season of participation in a competitive baseball league ($p < .05$). This change was not evident in 9 yr. olds. No differences in self-concept scores were found when Ss grouped according to experience, percentage of participation, and level of skill were compared.

349. **BURDGE, Jeannette Carol.** *The effect of an arts and crafts program on socialization of aged mental patients.* M.Ed. in Parks and Recreation, 1972. 89 p. (F. Humphrey)

Three male and 3 female participants over 65 yr. of age from a private psychiatric hospital voluntarily engaged in a 45-min., 3 times/wk arts and crafts program for a 6-wk. period. The functional level of the Ss was ascertained during 2 preliminary arts and crafts periods. This functional level was used as a baseline for the establishment of the main program activities which included the basic art skills of cutting with scissors, gluing, painting with brushes, drawing, and tearing thin strips of paper. The program utilized a catalyst-facilitator leadership environment. Data were gathered using a daily log, a daily participant rating scale, and a weekly general behavior evaluation form. It was found that the program was effective in producing an overall positive change in the socialization of the group and that there was an increase in the amount of verbal communication among the individuals in the group. Maintenance and improvement of manipulative skills, particularly use of fingers, resulted from the arts and crafts activities. The socialization effects of the arts and crafts program was not generalized to the geriatric unit.

350. CHIAROTTI, Roseann M. *An investigation of the energy expenditure of women squash players.* M.Ed. in Physical Education, 1972. 93 p. (L. I. Magnusson)
The skill of the beginners (N=9) was rated 3 times and the skill of the advanced players (N=6) was rated twice during a 10-wk. instructional period. All Ss performed 3 max VO_2 tests. Beginners played squash 3 times with opponents of equal skill. Five beginners played 1 time with advanced players. Advanced players also played twice with opponents of equal skill. HR were telemetered during all playing sessions. Skinfold measures were taken at the beginning and end of the study on all Ss. No differences were found in the percentage of body fat, max VO_2 or max HR from beginning to end of this study for either group. The skill of the beginners improved significantly while there was no change in the skill of the advanced players. Changes in the energy expenditure of beginners playing opponents of equal skill were inconsistent as skill improved, but the energy expenditure of these players was less than the energy expenditure of advanced players playing opponents of equal ability. Beginners expended more energy while playing advanced players than while playing opponents of equal skill and advanced players expended less energy while playing beginners than while playing other advanced players.

351. COBER, Linda J. *A personality factor study of participants in high risk sports.* M.S. in Physical Education, 1972. 110 p. (D. V. Harris)
Participants in SCUBA diving, sky diving, and mountain climbing (N=65) and nonrisk sports participants (N=60) were tested using factors C, F, H, I, and O from the Cattell 16 PF. The high risk sports participants were more self-assured, confident, and serene (factor O) than the nonrisk sports participants. The risk sport females were more self-assured, confident, and serene (factor O) than the nonrisk females. The risk sports males were found to be more tough-minded, self-reliant, and realistic (factor I) than the risk sport females. The experienced risk sport participants were more tough-minded, self-reliant, and realistic (factor I) as well as being more self-assured, confident, and serene (factor O) than the novice risk sport participants.

352. COURTNEY, G. Louise. *Effects of a program of physical activities on the balance of elementary educable mentally retarded children.* M.Ed. in Physical Education, 1972. 82 p. (C. A. Morehouse)
During the 1971-72 school year, 2 30-min. class periods each week were devoted to an instructional program in PE. The control group (9 EMR boys and girls) participated in a PE program similar to the exp. group (12 EMR boys and girls), except various activities designed to develop balance were employed in the exp. group's program. The Balance Stick Test, 1st right then left foot; the Leaping Footprint Test; the Springfield Beam Walking Test; and the Dodging Run Test were administered to each group prior to the fall program, prior to the winter indoor program, prior to the spring outdoor program and at the end of the school year. Results of the pretest and the posttest indicated that no difference existed between the Ms of the control and exp. groups on any of the test items. M performances of the exp. group improved significantly on the Springfield Beam Walking Test and the Leaping Footprint Test, while the control group showed improvement on the Leaping Footprint Test, and the Dodging Run Test. Neither group showed improvement in static balance as measured by the Balance Stick Test.

353. CRAMER, Mary Valentine. *The effect of musical stimuli during motor activity upon the attention to a task of the educable mentally retarded child.* M.Ed. in Physical Education, 1972. 40 p. (H. M. Lundegren)
The effect of slow (folk) and fast (popular) musical stimuli and an absence of musical stimuli during playground ball handling upon the attention to the task of 14 EMR boys and 10 EMR girls was studied. Three groups of 8 individuals performed the activity on 3 alternate days of the week for 2 alternate weeks. The order of the stimuli during performance of the activity was as follows: group 1, fast, no music, slow; group 2, slow, fast, no music; group 3, no music, slow, fast. The activity was performed to 1 type of stimulus per day. The musical stimuli were projected by a portable record player and all sessions were videotaped. The attention of the Ss to the task was measured by the total time in seconds in which the S attended to the ball. ANOVA indicated that no difference existed among the effects of fast (popular), slow (folk), and an absence of musical stimuli upon the attention to the task of playground ball handling for the EMR child.

354. **DOLDE, Elizabeth M.** *Guidelines for therapeutic recreation programs for emotionally ill and mentally retarded residents within Commonwealth of Pennsylvania institutions.* M.Ed. in Recreation and Parks, 1972. 187 p. (F. Humphrey)

Elements of therapeutic REC were defined as the philosophy; goals and objectives; programs; staffing; in-service training; facilities, equipment and supplies; and budgeting of the therapeutic REC dept. The data were obtained from 2 sources: a review of the literature and an analysis of information gathered by mail questionnaire and interviews from 22 REC directors within state schools and hospitals in Pennsylvania. Findings delineated several areas where change would be desirable within the overall activities of the therapeutic REC dept. in Commonwealth institutions, including budgetary problems, needed staff, equipment, repairs and transportation for patients. On the basis of the guidelines, the Therapeutic Recreation Position and Standards Committee, which operates under the auspices of the Dept. of Public Welfare, will develop a series of sequential standards within each of the elements that would allow a therapeutic REC dept. to evaluate progress within each component area.

355. **FABER, David A.** *A content analysis of the four gospels in relation to Jesus' use of the outdoors.* M.Ed. in Recreation and Parks, 1972. 152 p. (B. van der Smissen)

The content of the 4 gospels in *The New English Bible New Testament* (1961) translation was analyzed with the assistance of the Computerized Language Analysis System developed by Borden and Watts at State University in 1970. Nearly three-quarters of the text material in the 4 gospels which recorded the activities of Jesus indicated that they took place out-of-doors. About three-quarters of 1023 occurrences of 186 outdoor words represented settings, objects, or phenomena used in some way by Jesus. Approximately one-half of the total occurrences (about two-thirds of those representing some use of the outdoors by Jesus), were used illustratively, figuratively, or as analogy by Jesus to communicate spiritual values. The outdoor words describe aspects of the natural and rural environment which are common to contemporary outdoor educational experiences. The pattern of the outdoor educational method of Jesus involved the use of outdoor settings and media.

356. **FARRELL, Patricia.** *The meaning of the recreation experience in music as it is defined by urban adults who determined typal profiles through Q-technique.* D.Ed. in Physical Education, 1972. 206 p. (B. van der Smissen)

Theoretical and empirical meanings that had been assigned to the music experience in the literature were classified into 7 factor categories. Statements of meaning, gathered from a variety of singing groups, were generated and codified by factor categories, and a final Q-sort deck of 67 statements was developed and used in testing 184 adult singers in the Harrisburg, Pennsylvania area who represented 6 choral groupings. The Indiana-Oregon Music Discrimination Test and a background questionnaire were also administered to the Ss. Findings indicated that discernable differences among singers could be found regarding the meaning of the music experience by use of the Q-sort. Three of the 7 singer types identified accounted for 85% of the total variance of all types and 84% of the total number of singers studied. The singer type was highly related to certain choral groups; the Earnest Musician to the choral society, the Music Missionary to the church/gospel groups, and the Proud Groupie to the men and women barbershoppers. Some significant associations and relationships were found among the social characteristic variables and the music discrimination score variable.

357. **GARMAN, J. Frederick.** *The relative effects of static and dynamic exercise on endurance of the quadriceps femoris muscle groups.* M.S. in Physical Education, 1972. 93 p. (K. G. Stoedefalke)

Male Ss (N=23) recruited from the required PE wt. lifting classes at State Univ. were divided into 3 exp. groups. Group 1 trained statically utilizing 2 isometric quadriceps setting exercises; group 2 trained dynamically following a DeLorme progression of 3/4 knee bends; and group 3 acted as a control pursuing normal class activity. Endurance time was measured through an electrogoniometric method and static strength measurements were obtained using a cable tensiometer. Following a 5-wk. training period, an analysis of the increments of change between pre- and posttest scores of max static and dynamic endurance measures indicated an increase in endurance capabilities, but difference among the Ms of the 3 exp. groups did not prove significant. The conclusion drawn was that endurance development tended to be specific to the type of training regimen utilized.

358. **GODBEY, Geoffrey Clay.** *The role of advisory councils in Philadelphia's Department of Recreation.* Ph.D. in Physical Education, 1972. 211 p. (B. van der Smissen)

Two samples of REC advisory councils were selected, 1 from a poverty area and 1 from a nonpoverty area. Interviews with staff members and council presidents, questionnaires dealing with socioeconomic characteristics of council members, and direct observation of meetings were used to determine council structure, membership, and critical issues. Findings showed that councils were composed of individuals of homogeneous socioeconomic characteristics. Councils outside the poverty area were more effective in fulfilling a number of prescribed duties and were more willing to engage in confrontation tactics than poverty area councils. It was concluded that the degree of benefit from REC councils was greater in nonpoverty areas than in poverty areas.

359. GOLDBERG, Robert L. *A biomechanical analysis of the takeoff in forward rotating dives.* M.S. in Physical Education, 1972. 70 p. (C. A. Morehouse)

Biomechanical analyses were conducted of 4 forward rotating dives: the forward dive, somersault, 1½ somersault, and 2½ somersault, as performed by 4 skilled divers using the tuck position from the 1 meter springboard. The Locam motor driven camera operating at a rate of 103 FPS was used to film the dives which were analyzed with a Vanguard motion analyzer. The variables calculated from the coordinate data included horizontal and vertical velocities of the body center of gravity during the hurdle and dive; horizontal and vertical distances covered in the hurdle and dive; arm, trunk, and total body angles at takeoff; and angular velocities and accelerations before and after the takeoff. The results indicated that the characteristics of the hurdle were individual and were not altered systematically with the dive being performed. There was no pattern in the accelerations or velocities of the body segment; however, there was an increase in the arm and trunk angles and body angle at takeoff as additional rotation was desired. There was an inverse relationship between the velocity of the rise of the diving board and the vertical velocity of the body center of gravity while on the board as dives requiring greater amounts of rotation were performed.

360. GRIES, William E. *An analysis of the open space areas provided by selected cluster developments in Montgomery County, Maryland.* M.Ed. in Recreation and Parks, 1972. 115 p. (B. van der Smissen)

Cluster subdivisions (N = 11) with potential populations comparable to a neighborhood unit were evaluated to determine the quantity and quality of the open space preserved. Quantity was determined by totaling the acreage figures as they were specified on the adopted cluster plans, or if the acreage figures were not specified, a polar planimeter was used to measure open space acreage. Quality was based on 4 factors: topography, configuration, proximity, and accessibility. These factors influenced the function of open space as either "natural area" (generally undevelopable for intensive REC use because of limiting physical features) or "REC area" (suitable for intensive REC development). The open spaces were also examined through the use of the "Components Concept" method of REC planning to determine their adequacy in providing opportunities for desirable recreation experiences. A majority of the cluster projects set aside more than 20% of the total project acreage as open space, considered to be predominately "natural area." It was concluded that the open spaces generated through cluster contributed significantly toward meeting the REC needs of the cluster communities.

361. HAMM, Donna R. *Motives of junior high school girls for participation in physical activities.* M.Ed. in Physical Education, 1972. 93 p. (H. M. Lundegren)

The motives for participation in physical activities and their importance to the individual were explored by means of a Q-sort task. The question of intent was presented to a pilot group and resulted in 75 relatively clear and unambiguous motives for participation. A Q-sort, based on those motives, was completed by 93 JHS girls. Results were subjected to Q-analysis which includes Pearson's Product Moment Correlation, a principal components inverse factor analysis, varimax rotation, and WRAP (weighted rotational analytic procedure). The 5 motive clusters identified were: health and beauty cluster, social butterfly cluster, fitness and grade-conscious cluster, weight-watcher cluster, and athletic cluster.

362. HEINOLD, Wioliam D. *The establishment of a sports spectator typology utilizing Q-sort methodology.* M.S. in Physical Education, 1972. 145 p. (D. V. Harris)

An open-ended questionnaire was administered to 268 Ss who responded with reasons for their involvement in sports as a spectator. All responses were listed and analyzed for repetition. A total of 39 nonoverlapping statements resulted, to which were added 33 reasons for watching sports, gleaned from the literature. Corrected for social desirability and transformed into the infinitive, these statements constituted a 72 item Q-deck. The Q-sorting process and a 19-item background questionnaire were completed by 106 Penn State Univ. students. The results of the Q-sorting were subjected to inverse factor analysis and item-description analysis. The factor analysis yielded 8 distinct spectator types describable on the basis of the item-descriptions. The spectator types were: competition, excitement and thrill seeker; socially oriented, team and friend supporter; beauty, precision and skill admirer; athlete and training appreciator; skill oriented, envious onlooker; passive, self-indulgent relaxer; power, skill and hero identifier, and self--

improver. Some differences among groups were also described through X^2 analysis of background data with spectator type.

363. **HERSH**, Alan Joel. *Morale patterns in the leadership of organized children's camp.* M.S. in Recreation and Parks, 1972. 121 p. (B. van der Smissen)

Camp counselors (N=348, two-thirds classified as "most successful" and one-third as "least successful") submitted 1104 usable critical incidents relating to morale situations which had occurred in the camp during the previous summer. The incidents, analyzed for elements which were either negative or positive morale producing, were grouped into categories: camp program, peer group relations, personal factors, planning process, supervisory process, staff benefits, communication, actions of director, camper contact, training and preparation, administrative practices, health related conditions, staff changes, staff moral conduct, physical conditions, intervention and miscellaneous. It was concluded that identifiable morale patterns occurred among counselors; positive morale is more frequently influenced by factors related to camp program and the relationships between the members of the camp staff and negative morale by factors related to the actions of the director and peer group relations, as well as administrative practices; and relationships exist between classification variables, such as age of counselor, type of camp, counselor's primary supervisor, and number of years of camp-staff experience, and the distribution of the elements reported.

364. **JOHNSON**, James. *Goal congruency in the mutual improvement association of the Church of Jesus Christ of Latter-Day Saints.* M.Ed. in Recreation and Parks, 1972. 184 p. (B. van der Smissen)

This study investigated congruency between the perceived and preferred goals of the supervisors, leaders, and participants in the M.I.A. A list of goal statements divided into categories—spiritual, recreation experience, social, cultural and intellectual—was prepared and respondents requested to rate each goal's importance on a scale of from 1 to 6. Respondents were asked what they thought the goals of the M.I.A. are presently and what they should be. The conclusions based on the findings of the study were: the goals of the M.I.A., as seen by the supervisors, leaders, and participants are generally congruent on the amount of emphasis perceived and preferred goals are and should be receiving; there is a general dissatisfaction among the supervisors, leaders, and participants with a degree of attention goals are receiving in the M.I.A. at the present time inasmuch as with only—exception the preferred goal mean scores exceeded the perceived goal scores; and a goal's importance is determined to a great extent on the ward level inasmuch as the greatest differences between the supervisors, leaders, and participants were found by wards.

365. **JURIK**, Richard A. *The outdoors: An environmental condition to nurture creative thinking.* M.Ed. in Recreation and Parks, 1972. 79 p. (B. van der Smissen)

Two groups of 6th grade pupils were tested at the beginning of the exp. period with the Torrance Tests of Creative Thinking, Figural A. The exp. group (N=30) experienced 13 outdoor education activities incorporated into units within the curriculum areas of social studies, science, art, and music. The control group (N=25) had no outdoor education activities, only their regular classroom routines. After 45 school days both groups were given the Torrance Tests of Creative Thinking, Figural B. The tests used in the study measured nonverbal creativity. Based upon the findings of the study it was concluded that the utilization of generalized outdoor experiences as a teaching medium does not increase the level of creative thinking of boys, but is effective with girls as related to figural elaboration.

366. **KAROTKO**, Robert J. *Development of a visual method of river assessment with application to a river segment for eligibility for inclusion in the federal and a proposed state river system.* M.Ed. in Physical Education, 1972. 156 p. (F. Coombs)

A visual method of river assessment was developed based upon the National Wild and Scenic River System, a proposed Pennsylvania river classification system, and Luna B. Leopold's method for comparing aesthetic factors among rivers. Forty-three factors were established as criteria. These were divided into visual natural resource features and visual man-modified features. These 2 categories were further subdivided into valley and river characters, while spatial and vegetative characters were additional subdivisions of the visual natural resource features. For each factor a 5 position quantification scale was devised. A weighting system for comparing different stations along a river segment, as well as 2 rivers or segments, was based upon a ratio determined by the position of a particular station on each factor. The visual method of river assessment devised was tested in application to a 15-mile segment of the Lehigh River and the Pine Creek in Pennsylvania. It was determined that the Lehigh River segment did meet criteria for inclusion in the National Wild and Scenic River System as well as the Pennsylvania river system.

367 **KENNICKE**, Leola. *Self profiles of highly skilled female athletes participating in two types of activities: Structured and creative.* M.S. in Physical Education, 1972. 101 p. (D. V. Harris)

This study investigated the self profiles of adolescent female athletes to determine if differences existed between the social profile and the participant profile of athletes in 2 different types of activities, creative and structured. The perceptions athletes in structured activities had of athletes in creative activities, and vice versa was also investigated. The perceptions the 2 groups had of their coaches were also compared. The Gough Adjective Checklist was used to measure the social profile and the participant profile, as well as the perceptions of other athletes and coaches. The investigator concluded: very few differences in self profiles (both social and participant) existed between athletes in structured and creative activities; athletes in structured activities perceived themselves differently as they moved from a social situation to a participant situation; athletes in creative activities perceived themselves differently as they moved from a social situation to a participant situation; athletes in structured activities saw athletes in creative activities different from themselves and vice versa. The 2 groups of athletes viewed their coaches as being similar.

368 **KLEINMANN**, Pauline. *An analysis of articulation problems of two-year colleges with four-year institutions as related to a recreation and parks curriculum.* M.Ed. in Recreation and Parks, 1972. 74 p. (B. van der Smissen)

REC and Parks Department Chairmen of 11 4-yr. colleges and univ. in the states of Maryland, New York, and Pennsylvania were interviewed. Areas investigated were admissions requirements for transfer students, course and credit evaluation, criteria for transfer acceptability and articulation policies and suggestions. In addition 12 REC and parks dept. chairmen from 2-yr. schools in the same states responded to a questionnaire. Type of 2-yr. program and transfer possibilities, graduates and type of degree, admissions policies, curriculum content and planning and articulation policies and suggestions were examined. The study presents data in each of the areas. Conclusions included: the 4-yr. admissions criteria for the transfer student are not exacting; the transfer student is experiencing difficulty with transferring REC and parks courses but not liberal arts courses; the articulation problem is intensified because of lack of cooperation and communication between the 2-yr. and 4-yr. schools; and although the 2-yr. schools advocate a transfer and terminal program, their curriculums are designed as terminal programs.

369 **KLEINSCHMIDT**, David. *An evaluation of the required boys' physical education and health programs in selected private schools by means of the LaPorte Score Card II.* M.Ed. in Physical Education, 1972. 91 p. (E. A. Gross)

The boys' PE depts. in 6 schools of the Ivy Prep League of New York were evaluated through the LaPorte Score Card II. The total enrollment of the boys in grades 9-12 in the schools ranged from 229 to 650. Each school was surveyed within 1 day by personal interview and evaluation by the writer. The results of the survey were expressed in terms of the scoring of each school in the 10 areas of the score card and the 10 items in each area. The treatment of findings included a description of each school, and the tabulation and interpretation of the data collected in terms of the standards of the score card. No attempt was made to offer solutions to the findings. The selected schools were rated above average as a group in 9 of the 10 areas, and below average in 1 of the 10 areas. All schools were minimal in the area of modified individual (corrective) activities.

370 **LA CHANCE**, Robert M. *Principles of motivation which influence participation in physical activity.* M.Ed. in Physical Education, 1972. 180 p. (D. V. Harris)

Principles of motivation were organized into 2 general categories. The 1st category of success-failure included all factors related to or affected by the probabilities of success or failure. The 4 motivation principles of this category were of an extrinsic nature and included achievement motive, self-concept and self-esteem, social approval, and risk-seeking and stimulus-seeking. The 2nd category included the motivational principles which enhanced the well-being of participants. The 2 principles of the enhancement of well-being category were of an intrinsic nature and included catharsis and the feel-better phenomena. The investigator established the motivation principles from 24 corollary statements. Specific ways which each corollary could be followed to stimulate further involvement by participants were proposed.

371 **LAHTI**, Donna M. *The values of wilderness camping.* M.Ed. in Physical Education, 1972. 97 p. (H. M. Lundegren)

This study investigated the differences in values and environmental background characteristics of individuals (N=38) who choose to be involved in wilderness camping as a leisure time pursuit, a group of tent and/or trailer campers (N=33) and a group of individuals who do not camp at all (N=28). All Ss completed a background questionnaire designed to obtain demographic data about the Ss, information about their camping experience as well as to aid in ascertaining an expression of values characteristic of the 3 groups. In addition, the Allport-Vernon-Lindzey Study of Values was utilized as a measure of relative prominence of 6 basic interests or motives in personality. Frequencies and percentages were computed for the Wilderness Camping Values Questionnaire and the A-V-L Study of Values was evaluated utilizing a 1-way ANOVA. The findings indicated that wilderness campers do differ somewhat in terms of environmental background from that of the other 2 groups and that the tent and/or trailer campers and wilderness campers are more similar to each other. Wilderness campers express similar beliefs in terms of the values of camping and both groups of campers also hold values different from those of the noncampers in the theoretical, economic, and political domains and from the tent and/or trailer campers in the theoretical domain.

372 MacDUFF, Nicole C. *Effects of music and rhythm on the biomechanics of a specific dance movement.* M.S. in Physical Education, 1972. 94 p. (R. C. Nelson)

Women dancers (N=12) performed a run-run-leap sequence under 3 conditions: no sound, metronome set at 126 bpm, and music with the same underlying beat. They were photographed with a 16-mm camera at 100 FPS. Biomechanical variables studied were the vertical and horizontal displacement of the center of gravity, stride length, times of support and nonsupport, total time and the angle between the legs at specific points in the movement. Results revealed no differences in the biomechanics of the movement when accompanied by music as opposed to rhythm. However, the ability of the dancers to follow the beat was affected as they were consistently early when accompanied by rhythm only and consistently late with music.

373. MANSFIELD, John R. *The effect of using videotape and loop films as aids in teaching the breast stroke whip kick.* M.Ed. in Physical Education, 1972. 55 p. (J. Nessler)

Female undergraduate intermediate swimmers (N=34) were equally divided into a control group and an exp. group according to their scores on a weighted checklist of common breast stroke whip kick faults. Swimming experts (N=3) derived a checklist score for each S by analyzing 16-mm films of the S's breast stroke whip kick at the beginning and the end of the study. The control group received conventional instruction in the breast stroke whip kick for 15 min/day for 10 days over a 5-wk. period. The exp. group received similar instruction but viewed loop films of experts and videotape replays of their own performances once weekly (for 3 min.) in lieu of an equal amount of practice time. At the end of the study, there were no differences between the groups on either an objective test of whip kick power or on the checklist scores of whip kick faults. Both groups did, however, show improvement over the instructional period as measured by the pre- and posttest checklist scores of each group.

374 McCREA, Edward J. *Vandalism on private campgrounds.* M.S. in Recreation and Parks, 1972. 81 p. (B. van der Smissen)

The relationships between vandalism and aspects of size, use, location, and clientele were investigated. A subproblem investigated methods employed to reduce and prevent vandalism. Campground operators (N=69) (67%) replied to the mailed questionnaire. The operators reported 632 incidents of vandalism which resulted in a total of $12,750 damage to [illegible] campgrounds or $190 damage per campground; 1273 hr. were spent repairing damage from vandalism. The 5 most common types of vandalism were trees damaged, littering buildings, vending machines broken, shower heads stolen, and windows broken. Vandalism was found to be directly correlated with campground size and amount of use, and inversely correlated with the campgrounds distance to main roads and large cities. The amount of vandalism was less for campgrounds at which the majority of the campers stayed for only 1 night. The operators suggested 29 successful methods of combatting vandalism with improvements in design or replacement with heavier materials comprising a majority of the successful cases.

375. McDERMOTT, Grace Marie. *The urban child and environmental education.* M.S. in Recreation and Parks, 1972. 104 p. (B. van der Smissen)

The 1st stage of this study dealt with research conducted on the needs and characteristics of the urban educationally disadvantaged student, his relationship to his immediate environment, and outdoor education and environmental awareness experiences not only as an approach to general ecology, but also as a means of improving the academic skills of urban children. An urban environmental education program was developed. This 3-pronged program consisted of environmental materials to be utilized in the city "lab" classroom activities, and nature center experiences as environmental reinforcement of the basic ecological/environmental understanding encountered in workbook and classroom experiences. "Becoming a nature detective in your own neighborhood," an urban environmental workbook, presented activities based on ecological/environmental understandings deemed important by a panel of experienced judges (ecologists, ELE science educators, and outdoor educators) as the basic foundation for a working understanding of and relationship to the environment.

376. **MEGAHEY, Michael E.** *A comparison of televised and direct instruction in a required health course.* M.Ed. in Physical Education, 1972. 83 p. (E. Hunt)

Ss (N=172) were randomly selected from a required health course at Penn State, to participate in the exp. Two grad assistants were randomly chosen to act as instructors for the 5-wk. course which covered 9 topics. The Ss were randomly assigned to 1 of 4 groups, 2 of which were taught by 1 instructor while the other 2 groups were instructed by the other. Under each instructor, 1 group received direct instruction and the other received televised instruction. The current GPA, sex, educational level, and previous health experience of each S were obtained to extensively examine the 2 variables, which are: the students attitudes toward a mode of instruction, and the information acquired during the health course. Instruments used in the exp. included a final exam developed by the investigator and an attitude questionnaire. It was concluded that direct instruction is more effective than televised instruction when the student is required to recall health information ($p > 0.01$) and students participating in the study prefer direct instruction to televised instruction ($p > 0.001$).

377. **PAVLIS, Cathleen Ellen.** *The coincidence-anticipation ability of children of various ages.* M.S. in Physical Education, 1972. 80 p. (H. M. Lundegren and J. Nessler)

The ability of 60 children aged 7, 9, and 11 yr. to respond accurately in a laboratory coincidence-anticipation task was investigated. The 4 exp. variables examined were: age, sex, ball travel time of the stimulus object which was dependent upon a specific track, and feedback. The coincidence-anticipation task employed consisted of depressing a response key at the same time that a ball released down 1 of 3 steel V-tracks passed a designated line on that track. Accuracy was the difference between the ball travel time nad the S's estimation of that travel time. Feedback was given after each trial to those Ss assigned via 3 lights on the display denoting an early, correct, or late response. Each S was tested over 60 trials. Treatment of the data included an ANOVA for each track and coefficient of variability for a comparison across tracks. The data indicated that: children perform differently over several distinct ball travel times; accuracy and consistency of performance increased with an increase in age; and feedback and sex differences had no effect upon coincidence-anticipation performance.

378. **PLUMB, Steven.** *An analysis of perceived attitudes toward the environmental and sociological effects of the recreational use of off-road vehicles at the Back Bay National Wildlife Refuge.* M.S. in Recreation and Parks, 1972. 146 p. (H. M. Lundegren, B. van der Smissen)

An attitude inventory was developed and administered to resource managers, off-road vehicle owners, members of various conservation organizations, and other Refuge users (N=116). Conservationists and resource managers generally exhibited negative attitudes toward vehicular use, whereas vehicle owners definitely favored existing and continued vehicular use. The attitudes of conservationists and resource managers were most alike. Refuge users were the most inconsistent, while the attitudes of owners varied least. Attitudinal differences, in terms of specific environmental and sociological effects of off-road vehicular use, could not be verified.

379. **PRICE, Carroll.** *A comparison of public and resource administrator visual perceptions of an outdoor water-based recreation area.* M.S. in Recreation and Parks, 1972. 175 p. (B. van der Smissen)

Visual perceptions regarding a fictitious water-based REC area were recorded from a sample of 392 Pennsylvania residents and compared with the perceptions of 42 resource administrators who allocate, develop, or administer resources for public REC use in Pennsylvania. Results of the study showed that Pennsylvania citizens do not perceive environmental qualities in an opposite manner from the resource administrators. The effects of 5 demographic characteristics (age, sex, income, residency, and income) were tested and found to have only a very minor impact. The resource administrators showed a higher degree of sophistication and homogeneity in their response than did the public respondents. Both groups agreed closely on the components of an outdoor water-based REC environment that were most important to them when evaluating such an area, but could not agree on how they should be evaluated. Differences between the public and administrators seemed to be a function of orientation. The public was interested in the environment for its utility in satisfying personal needs while the administrators perceived from a professional or resource administration point of view.

380. **RECTOR, JoAnn.** *Self perception of the female athlete in social and competitive situations.* M.S. in Physical Education, 1972. 72 p. (D. V. Harris)

Personality research supports the concept that women athletes tend to have masculine personalities. If successful in their sport, these competitors possess a high need for achievement, dominance, aggression, and endurance. They are tough-minded, self-controlled, and self-confident. Although the female athlete has been attributed these traits, she may only elicit these in order to meet the challenges of athletic competition. Male traits associated with athletics may, for some women, be specific to sport and are not exhibited under other situations. This possible occurrence may explain why some athletes seem to possess different personalities on the playing field than they do in their private lives. Women athletes described themselves in social and competitive situations on selected variables from the Adjective Checklist. Social and competitive profiles were obtained for each athlete. Results showed that the female athlete had a social profile similar to her nonathletic peers and a competitive profile that portrayed her as having a high need for achievement, endurance, aggression, and dominance; a low need for affiliation, abasement, change, heterosexuality, and deference. Thus, the athletes confessed to possessing male traits for competition and a more feminine repertoire when involved socially.

381 REILLY, Richard D. *An investigation into the relationship between attitude and performance on an artificial versus a natural athletic surface.* M.S. in Physical Education, 1972. 82 p. (D. V. Harris)

An attitude inventory was constructed utilizing the semantic differential technique as the means of determining the attitude of football players toward playing on AstroTurf and grass. An instrument to measure the performance of football players in terms of time (speed) and force at impact over distance was developed using strain gauges and a recorder. Scores from the attitude inventory and performance instrument were correlated using the Spearman r to determine if significant difference existed between performance scores on AstroTurf and grass. No significant rs between attitude and performance were found. Data indicated relationships between the performance scores fastest times on AstroTurf and the attitude score of speed-quickness, as well as between the performance scores greatest force at impact on AstroTurf and the injury attitude score. Significantly more force was applied by the football players on AstroTurf than on grass. The writer concluded that no r exists between a football player's attitude toward playing on a surface and his actual performance on that turf.

382 RINEAR, Charles E. *An investigation of the knowledge of college students in the management of acute medical emergencies*—M.Ed. in Physical Education, 1972. 68 p. (E. Hunt)

Ss (N=185) were college students enrolled in required HE at the Univ. Park Campus of Penn State Univ. Students were given an Emergency Medical Care Knowledge Test to determine their knowledge relative to various acute medical emergencies and to determine what types of first aid training are most effective. Serious knowledge deficiencies were found to exist in regard to the management of various types of acute emergencies. This was particularly true in regard to the management of heart attack and other cardiorespiratory emergencies. Twenty-seven percent of the students had received no first aid instruction in either JHS or SHS as part of HE. First aid instruction outside of school was found to be more effective than first aid instruction in school. The combination of school instruction and instruction outside school appeared to produce an additive effect in knowledge acquired.

383 ROFFER, Barry J. *A comparison of the grab and conventional racing starts in swimming.* M.Ed. in Physical Education, 1972. 35 p. (R. C. Nelson)

Competitive college age swimmers (N=9) served as Ss. All Ss were trained in each starting technique. Exp. variables determined through cinematographic procedures included starting time, flight time, and total time to cover 12 ft. Significant differences favoring the grab start were observed for starting and total time but not for flight time. It was concluded that the grab start is superior to the conventional racing start used in the crawl stroke swimming events.

384 SADLER, Ronald J. *A comparison of two methods of teaching beginning bowling.* M.Ed. in Physical Education, 1972. 48 p. (J. Nessler)

College men (N=95) enrolled in 4 sections of beginning bowling classes in the required PE program served as Ss to investigate the effectiveness of a combination teaching method using verbal explanations, manual manipulations, demonstrations, visual aids, and individual coaching compared to the effectiveness of a general idea plus practice approach where Ss learned through self-directed practice. The Ss were given a 2-game pretest and a 10-game posttest to determine differences between and within groups. Results indicated that there was no difference in bowling ability at the end of a 5-wk. instructional period between the combination group and the general idea plus practice group. There was significant increase in bowling ability in both groups over the 5-wk. period.

385 SPRENKLE, Richard G. *A study of the county's role for parks and recreation in Pennsylvania.* M.Ed. in Recreation and Parks, 1972. 134 p. (F. Coombs)

An analysis of the county's role was made utilizing Pennsylvania legislation affecting county government, information received from 23 county park and REC systems in the U.S., interviews with 6 New York and New Jersey county park and REC systems, literature relating to county operations, and interviews with officials of the 18 Pennsylvania counties having a fulltime park and REC director. Nine primary roles were identified. These roles included comprehensive county, administrative, planning, finance, program, acquisition, facilities, conservation, and county-local government.

386. **STRATI, Joan P.** *An exploration of athletic ability, reduction, extroversion, and underestimation of body dimensions among females.* M.S. in Physical Education, 1972. 119 p. (D. V. Harris)
Female varsity athletes (N = 30) and 30 female nonathletes were tested on the Reduction-Augmentation Test for perpetual modulation of the sizes of blocks, on the Body Dimension Estimation Test for accuracy of estimation of certain body dimensions including arm span, standing ht., shoulder span, extended ht., and hip width, and on the Eysenck Personality Inventory for extroversion. The athletes were compared to the nonathletes on each of these 3 tests. Additionally, reducers and augmenters, as categorized by the R-A Test, were compared for body dimension estimations. The findings indicated that there were no differences between the athlete and nonathlete groups on the R-A Test or on the EP Inventory. On the BDE Test, the athletes under- rather than overestimated on the arm span, standing height, and extended height dimensions, while the nonathletes underestimated on none. Reducers underestimated on the standing ht. dimension, while augmenters did so on the arm span dimension. There were no differences in underestimation on any factors between athletes and nonathletes or between reducers and augmenters. That athletes were reducers and extroverts was not supported.

387. **TESTA, Barbara J.** *The effects on reaction time in the peripheral visual field of an increasing workload on a bicycle ergometer.* M.S. in Physical Education, 1972. 67 p. (H. M. Lundegren)
Ten physically conditioned and 9 unconditioned college women were tested perimetrically while riding a bicycle ergometer. The Ss performed 2 tasks while riding: keeping a central light activated and indicating when they detected a light in the periphery. Both groups rode the ergometer continuously for 3 min. at each of the following workloads: 25, 50, and 100 watts. Both central and peripheral RTs were recorded. It was hypothesized that as the workloads at which the Ss rode increased, the RTs to a display of 8 peripheral lights would also increase, and that these changes in RT would occur earlier in the work progression for the unconditioned group than for the conditioned group. The findings indicated that the conditioned group elicited no changes in RT and that the unconditioned group showed an increase in RT late in the work progression.

388. **WHITAKER, Johnette.** *A therapeutic recreation program in relationship to solitary free-play patterns of institutionalized mentally retarded male children.* M.Ed. in Recreation and Parks, 1972. 135 p. (F. Humphrey)
Two groups of 10 boys each were selected from the same ward, with group 1 composed of participants in the ongoing therapeutic REC program while group 2 were nonparticipants. Each individual was observed twice during a 10 min. free-play session within a prepared environment with 16 selected toys. Fourteen descriptive categories were established for analysis of play activities: combination, imaginative, transportation, structural, manipulative, auditory, creative, inspection, noninteractive, repetitive, oral, random, destructive, and inactivity. It was concluded: that therapeutic REC participants displayed more purposive free-play patterns in their solitary play than nonparticipants; more specific organization as well as more recognizable specialization in toy usage are observable in the free-play pattern of the participants than the nonparticipants; and a closed play environment allowing only solitary free-play and with preselected toys randomly arranged, can successfully be used to reveal and recognize play patterns.

389. **WOOSTER, Linda.** *Status of varsity competition for eastern college women in 1971 and changes from 1969-1971.* M.Ed. in Physical Education, 1972. 153 p. (L. I. Magnusson)
The status of varsity competition for eastern college women was determined by analyzing the responses received from the 1971 questionnaires and varsity competition forms. Changes were determined through comparisons between questions of the 1969 and 1971 questionnaires and varsity competition forms for those schools completing the form in both years. It was concluded: most of the colleges responding, who were all members of the EAPECW, have varsity programs for women; varsity programs are more structured as evidenced by more schools establishing athletic policies for their varsity programs, increased institutional membership in scheduling and policy-making groups, and earlier scheduling of varsity contests with confirmation by contracts; and there is no apparent relationship between number of varsity sports offered in a college program and undergraduate female population, budget size, and source.

390. **YOUNG, V. Louise.** *Spontaneous verbalization in educable mental retardates during five field*

trip experiences. M.Ed. in Recreation and Parks, 1972. 118 p. (B. van der Smissen)
Three students classified as EMR were selected from a special education school summer program as the most quiet in the class, the most typical of the students, and the most talkative in class for observation on 5 field trips with the entire class and in the classroom. One field trip was taken each week and represented different types of learning environment, such as guided and unguided, indoors and outdoors, and confining and unconfining. The trips included visits to a water cave, outdoor education area with nature trail, strip mine, military museum and historical mansion, and dairy and beef farms. One classroom observation was made each week. Observers recorded verbal responses as well as other actions of the 3 children. It was concluded: that field trips do affect the extent of verbal responses positively; the amount of freedom allowed including movement and speech has a positive influence on the frequency of verbalization; and that there are observable quantative differences among the field trips according to the characteristics of the trip and the nature of the responses.

391 ZACHER, Susan Marie. *Outdoor education approaches to teaching local history in third grade social studies.* M.Ed. in Parks and Recreation, 1972. 151 p. (B. van der Smissen)
Four classes in 2 ELE schools were assigned to 1 of 3 methods of teaching local county history with 2 classes in method 1. Method 1, 50 Ss, used direct experiences in the outdoors and nonschool settings in conjunction with a guided discovery workbook and prepared lessons. Method 2, 28 Ss, used direct experiences in conjunction with prepared lessons. Method 3, 17 Ss, used indoor activities and audiovisual aids in conjunction with prepared lessons. The findings in the study obtained with an achievement test and an interest survey show that differences between M scores for the pre- and posttest for all 3 methods were significant. The gain from pre- to posttest in method 1 was 69%, 60% gain in method 2, and a 40% gain in method 3. The students of method 1 differed on posttest M scores from the students of method 3, with a M score of 12 points higher. In ranking methods on question percentages, method 2 ranked 1st in highest pretest scores, with method 3 2nd; however, method 1 ranked highest in the percentage differences between pre- and posttest scores.

392 ZIEGLER, Susan G. *Changes in self perception of high school girls towards themselves and their coaches during a basketball season.* M.S. in Physical Education, 1972. 101 p. (D. V. Harris)
The Gough Adjective Checklist was given pre- and postseason to 4 girls' basketball teams and their coaches to determine the changes in social and basketball image of girls' basketball players and coaches. Players were analyzed according to teams, regulars versus substitutes, league winner versus league loser and basketball image versus social image, the transperception of their coach and the coaches self-perceptions. It was concluded: the social image of the girl varsity basketball player is somewhat affected by the amount of participation during the season, and the won-loss record of the team. The basketball season, the amount of participation during the season and the won-loss record of the team affects the basketball image of the girl. The team perception of the coach is altered somewhat during the season. There were 2 definite images involved for the competitor, the basketball image and the social image. It was concluded that the self perceived image of the girl competitor may be situational specific.

393 PANDOLF, Kent B. *A comparison of perceptual and physiological responses to laddermill climbing, cycling and stool stepping.* Ph.D. in Health and Physical Education, 1972. 138 p. (B. J. Noble)
Ratings of perceived exertion (RPE) were compared while 15 highly fit adult males performed physical work on 3 ergometers. Four testing sessions for each S involved climbing up (positive work) and down (negative work) a laddermill. Three sessions utilized the bicycle ergometer. One each for cycling at 40, 60, and 80 rpm. Another session involved stool stepping. Presentation of sessions and workloads was randomized for each S. The RPE comparisons between sessions were made at equivalent workloads (kpm/min) and/or metabolic levels (VO_2 and HR). An ANOVA was computed to determine perceptual and physiological differences. In many instances when Ss were at similar VO_2 and HR values such as cycling at various pedalling speeds, cycling compared to laddermill positive work, and stool stepping compared to cycling, RPE responses differed significantly. At equivalent workloads RPE responses differed significantly between positive and negative work; and stool stepping and cycling. Physical workload and metabolic level as indicated by VO_2 and HR, do not appear to be the only factors determining RPE during physical work stress. Local factors which appear to be associated with feelings of strain in the working muscles were hypothesized as important contributory factors in determining the RPE.

Purdue University, West Lafayette, Indiana (C. J. Widule)

394. DAVIS, Marcella V. *The influence of object size, speed, direction, height and distance on the interception of a moving object.* Ph.D., 1972. 136 p. (H. M. Smith)

395. HERKOWITZ, Jacqueline. *Filmed test to assess elementary School-aged children's perception of embedded figures which appear to move away from stationary backgrounds.* Ph.D., 1971. 161 p. (H. M. Smith)

396. MEAD, Barbara J. McMillan. *Observational learning of throwing by young boys under conditions of actual and symbolic presentation of a model.* Ph.D., 1972. 144 p. (M. A. Clifton)

397. MORRIS, Arlene M. *Children's perception of moving objects.* Ph.D., 1972. 244 p. (M. A. Clifton)

St. John's University, Jamaica, New York

398. ERICKSON, Audrey M. *A study of the nature, frequency, and related administrative factors of physical education accidents among girls in a selected sample of secondary schools in New York State.* Ph.D. in Educational Administration and Supervision, 1969. 176 p. (Z. Mahdesian)

Schools ($N = 192$) completed a detailed report on personal and administrative factors for each accident in girls' PE and daily number of pupil exposures in each activity for 1 academic year. Overall accident rate was .02% but varied with different activities, being highest in skiing and touch football. The greatest number of accidents, but also the greatest number of exposures, occurred in basketball and volleyball. Of administrative factors reported in 34% of accidents, facilities, supervision, and scheduling occurred with about equal frequency and each significantly more often than equipment involvement ($p < .05$). In 40% of accidents with administrative factors, the primary cause involved large class size in relation to space and teachers available. Most accidents were not serious: strains, sprains, and bruises comprised 70%. The leg or foot was affected more frequently (40%) than other body parts. Number of accidents was greatest in classes but incidence highest in interscholastics. PE instructor was present in 97% of occurrences. Of all accidents, 61% occurred in SHS, with 11th grade having the greatest proportion (23%) and 7th grade the least (10%).

Smith College, Northampton, Massachusetts (L. K. Vaughan)

399. CRISPEN, Jennifer L. *The relationship between the Behnke System of Bodytyping and Performance on the Skubic-Hodgkins Step Test by college women.* M.S. in Physical Education, 1972. 39 p. (P. D. Downie)

Ten anthropometric measures and 1 30 sec. postexercise pulse count were recorded from 50 Ss. The Ss were classified as slim in body type according to the Behnke system. No relationship was found between the percentage of body fat and performance in the step test nor between ht., wt., and performance in the step test.

400. CURSON, Caren L. *The uniformity of pain threshold and length of pain intensity in college women participating in selected environmental activities.* M.S. in Physical Education, 1972. 52 p. (P. D. Downie)

A "cold pressor" test was administered to 132 Ss selected from sports activities classified as environmentally warm and cold. Following immersion of the S's dominant hand in water at 8°C, the M scores for pain threshold and length of pain intensity revealed that the cold environmental group was more able to withstand immersion than the warm environmental group in both measures. Reliabilities were .52 and .63.

401. HERRICK, Constance. *The academic record as a factor in employment.* M.S. in Physical Education, 1972. 123 p. (L. K. Vaughan)

The questionnaire method was used in a survey to determine the possible influence of the grades achieved and the form of grades used upon a hypothetical candidate's potential eligibility for an instructor's position in PE at the college level. Each questionnaire contained brief fictitious dossiers for 8 candidates who were paired in all information except the form of grades on their transcripts. Ss were 87 colleges and univ. in the continental U.S. with a dept. of PE for women and not less than 6 faculty members. Ss were asked to preferentially rank the candidates and rate 7 selected factors according to their influence. The results indicated that transcripts were not a deciding factor in employment. When the decision was between 2 approximately equal candidates, the candidate with pass-fail grades usually ranked higher than her counterpart with ABCDF letter grades. The factors which were rated most influential were: degrees held, experience, major and minor areas of study, and recommendations.

402. IGBANUGO, Veronica Chinyelu. *The effect of task difficulty on transfer of accuracy.* M.S. in Physical Education, 1972. 76 p. (L. K. Vaughan)

Women students at Smith College (N=99) were used as Ss to investigate the transfer effects of practice at 3 difficulty levels on 2 accuracy tasks—basketball goal and shooting and chest passing. Three groups of Ss practiced the 2 tasks on either a large, smaller, or identical target to the test targets. The Ss were administered a posttest on the criterion tasks at the end of 2 wk. of practice. There was no difference between the 3 treatment groups on the basketball goal shooting task. The result obtained in the chest passing task revealed a difference $p < .05$ in favor of the small target. This lends further support to the hypothesis that difficult-to-easy order of training is better for positive transfer effects.

403. JANSEN, JoAnn. *A description and analysis of four ancient Indian dance forms and their relationship with the origin and development of ancient Greek and medieval English drama.* M.S. in Physical Education, 1972. 131 p. (L. K. Vaughan)

The classical Indian dance forms of Kathakali, Bharata Natyam, Manipurri, and Kathak were surveyed with respect to the dance techniques, the training, and social structure, the costumes, and the meaning of the stylized hand gestures. A historical analysis of the art forms of Indian dance, Greek and medieval English drama indicated that all had their beginnings in religious celebration and all 3 forms were concerned with the mythologies of their respective gods. The 3 forms based their structure on the rituals of their religions and all transmitted various kinds of religious feelings or explanations to their audience.

404. NUTT, Kathy S. *The development of a teaching progression for beginner and intermediate jumping as highlighted on cartridged film loops.* M.S. in Physical Education, 1972. 86 p. (L. K. Vaughan)

A teaching progression for beginner through intermediate jumping was developed. This progression was based on a survey of literature written by professional horsemen and responses received from a questionnaire sent to selected eastern U.S. colleges which had an active riding program as part of the PE curriculum. Cartridged film loops were developed which represent points of major emphases in the teaching progression. Included in the film loops are riders position, work over cavalletti, single fences, 1 strides, diagonal courses, grids, figure 8's, spreads, no stride in and outs, and course work.

405. PAWLOWSKI, Miriam. *Movement assessment of perceptually handicapped children by means of modified Labanotation and effort notation.* M.S. in Physical Education, 1972. 358 p. (L. K. Vaughan)

Four Ss with visual perception problems and 4 control Ss of nearly the same CA were tested according to predetermined movement tasks founded on Laban's basic efforts. The movement tasks were judged to be effective in producing the extreme effort actions. A modified use of effort notation and Labanotation provided accurate and thorough analysis of the 2 groups. The exp. Ss were found to exhibit similar efforts which were distinct from the efforts in the movement patterns of the control Ss. The float, dab, and flick efforts provided the most difficulties for them. The combination of effort elements to form the basic efforts was achieved less frequently by the exp. Ss than the control Ss.

406. RILEY, Barbara E. *The effects of different instructional methods on the learning of a specific motor pattern by children of low economic status.* M.S. in Physical Education, 1972. 57 p. (L. K. Vaughan)

Low economic level preschool children (N=13) ages 3.5 to 6 yr., from the community Head Start Center in Williamsburg, Massachusetts, were Ss. They were separated into 3 groups according to age, and then taught a specific motor pattern under 3 different cueing methods. Group 1 was taught the pattern by demonstration verbal cues, group 2 by demonstration cues, and group 3 by verbal cues. The children were instructed in 15 min. sessions, 2 days a week for 4 wk. On the last day 5 judges were present to judge the final level of performance. Difference in learning time was not significant. On the final level of performance group 3 under verbal cues was significantly superior at the .05 level of confidence to groups 1 and 2.

407. SAYLES, Mary-Lou. *An investigation into three avant-garde dancers and the development of an original choreographic work.* M.S. in Physical Education, 1972. 52 p. (P. D. Downie)

The philosophy of 3 choreographers (Ann Halprin, Meredith Monk, and Twyla Tharp) formed the basis of the development of an original choreographic work. The production was recorded on videotape and the performance was evaluated by 4 dance educators.

408. **SPINNER, Ellen.** *The personality differences between field hockey players and basketball players.* M.S. in Physical Education, 1972. 58 p. (P. D. Downie)

The 16 PF and the EPPS were used to measure the personality differences of 160 undergraduate college women who were classified into 2 groups—players and nonplayers. Within each sport, the Ss were identified as advanced or average levels, and offensive or defensive positions. Within each sport, the Ss were identified as to position on the team and level of performance. Of 217 M trait scores obtained for the groups only 18 revealed differences.

409. **WHITAKER, K. Gail.** *Performance changes following ingestion of sodium bicarbonate solution prior to swimming in long sprint events.* M.S. in Physical Education, 1972. 52 p. (P. D. Downie)

Each of 16 trained male college swimmers was administered a solution containing 5.0-gm. sodium bicarbonate, an alkalizer, 5 min. prior to swimming a 100-yd. sprint in butterfly, backstroke, breaststroke, or freestyle. Analysis of the Ms for each group of 4 Ss revealed no difference between the alkalized and the best previous times for any of the 4 events. For the 4 freestyle swimmers, a significant improvement ($p < .05$) was found between the alkalized and the best previous times of the season. This improvement was significant during the first 50 yd. of the effort but not during the latter 50 yd. For each of 6 individual Ss analyzed, there was no significant difference between the alkalized and the M normal performance time of the season.

410. **BARTON, Trudy K.** *A comparison of two teaching techniques with respect to the learning of beginning basketball skills by seventh grade girls.* M.A. in Teaching, 1972. 67 p. (M. J. Pruitt)

A study was conducted in which the individualized and the command methods of instruction were compared with respect to aiding the learning of beginning basketball skills. The Ss were 121 female 7th grade students. The testing instrument utilized was the AAHPER Basketball Skill Test for Girls. The *t* test for the difference between M's resulted in a significant difference at the .05 level between the Ms of the posttest on only 1 of the 9 test items. It was concluded that the individualized and the command methods of instruction were similarly effective in the aiding of the learning of beginning basketball skills.

411. **BOGNAR, Barry C.** *A survey of colleges and universities in the United States offering graduate teaching assistantships in men's physical education.* M.A. in Teaching, 1972. 58 p. (R. F. Kirby)

The purpose of the study was to determine which colleges and univ. in the U.S. offered graduate teaching assistantships in men's PE, and to compare Southeast Missouri State College's G.A. program with the institutions surveyed. Questionnaires were sent to 187 institutions of which 140 were returned. A graduate teaching assistantship was offered at 121 institutions at the master's level and at 31 institutions at the doctoral level. A major in PE was required at 74% of the institutions at the master's level and at 88% of the institutions at the doctoral level. Graduate teaching assistants were expected to teach activity classes at 92% of the institutions on the master's level and at 69% of the institutions at the doctoral level. The degree of M.A. was conferred at 30.07% of the institutions and the Ed.D. degree was conferred at 57.98% of the institutions. The average amount of stipend at the master's level was $2236 and at the doctoral level the average was $2617.

412. **CARROLL, Glen R.** *A history of the mile run and training methods at Southeast Missouri State College, 1962-1972.* M.A. in Teaching, 1972. 92 p. (J. E. Schneider)

The history of the mile run and training methods utilized during the period 1962 through 1972 were recorded in chronological order. Eight runners were studied over the 11 yr. of track and field history. The investigator explained and recorded the workouts, the training methods, and the improvements in the times of the mile run. Definite changes in trends of training methods were found. The mile run record was reduced 14.3 sec. through the period 1962-1972. A questionnaire that was answered by the Ss further explained the training methods utilized by each individual during his particular period of participation.

413. **COWIE, Paul B.** *The relationship between a rope climbing program and grip strength development in third grade children.* M.A. in Teaching, 1971. 47 p. (M. J. Pruitt)

The purpose of the study was to determine the effect of a rope climbing program on grip strength. Grip strength tests were administered to 42 3rd grade students. Grip strength was measured 4 times by means of a Jamar adjustable hand dynomometer. Strength was measured before, twice during, and at the conclusion of an 8-wk. rope climbing program. ANOVA determined the differences between the grip strength measurements of the control group and the 2 exp. groups. No significant differences were found.

414 KELLER, George P. *A comparison of the velocity of fastballs thrown from the windup and stretch positions.* M.A. in Teaching, 1972. 39 p. (J. E. Schneider)
Ten pitchers of the varsity baseball team at Southeast Missouri State College were tested to determine if there was any difference between the velocity of fastballs thrown from the windup and the stretch positions. Each pitcher threw 10 pitches, 5 from the windup, and 5 from the stretch. A device which measured voltage leakage was created especially for testing the velocity of projectiles. From the results, it was concluded that no difference existed between the velocities of the 2 variables.

415 MILLER, Thomas E. *A survey of evaluation techniques used in boys' physical education departments in high schools of Southeast Missouri.* M.A., 1971. 108 p. (R. F. Kirby)
A survey questionnaire was mailed to 168 SHS in Southeast Missouri to indicate evaluation techniques used in boys' PE depts. A total of 54% of the schools responded. Within the survey, the evaluative procedures were categorized into 5 divisions: school situation, general evaluation, skill tests, physical fitness tests, and written tests. The schools were divided into size classifications in order to compare evaluation techniques among different size SHS.

416 OWENS, Paul E. *A survey of selected sociological factors concerning SEMO male PE majors from 1960 through 1967.* M.A. in Teaching, 1972. 55 p. (R. F. Kirby)
A total of 148 of 268 graduates responded to a 70-item questionnaire utilized to obtain sociological information on former PE majors. The information from the questionnaire was used to compare the 2 major divisions within the group: teachers and nonteachers. The following conclusions were made: the teacher drop-out rate of the sample corresponds to the figures reported in the literature; the PE major will probably teach in another academic area during his career; a substantial number of graduates teach at the ELE or JHS level; most PE majors prepare for careers in both PE and coaching; most SEMO graduates remain in Missouri to teach, and few teachers return to their home town to teach and fewer still teach in the school from which they were graduated.

417 ORR, Jimmy D. *An analysis of three methods of rounding first base.* M.A. in Teaching, 1972. 46 p. (R. F. Kirby)
Male SHS students (N=28) were tested to determine what effects the Rickey method, the round-out method, and the angle-out method had on the speed of rounding 1st base. A secondary purpose was to determine which foot was the most advantageous in touching the base when using the 3 methods. Each S performed 15 trials, 5 on each method. The Ss were tested over a period of 5 days. One trial for each condition was given each day. The Ms for the group showed no difference between the Rickey and the angle-out methods. Differences were found between the Rickey and the round-out methods and between the angle-out and round-out methods. No difference was found between the left foot and the right foot used in touching the base on the turn.

418 RUSSO, Thomas L. *The influence of competition on the motor performance of seven year old boys.* M.A. in Teaching, 1971. 54 p. (R. F. Kirby)
Seven yr. old male 1st graders (N=92) were tested to determine the influence of 2 competitive situations on performance. The 2 competition situations were individual competition and group competition. Three tests were used to measure performance: standing broad jump; softball accuracy throw; and 50-yd. dash. A difference was found at the .01 level between the individual competition and the "control" situation. No difference was found between individual competition and group competition. The results indicate that competition does have a positive effect on the motor performance of 7 yr. old boys.

419 ZOLL, Bill D. *A survey regarding the substitutions permitted for physical education activity classes in the public high schools of Classes "A," "AA," and "AAA" in Southeast Missouri.* M.A. in Teaching, 1971. 42 p. (R. F. Kirby)
A survey was conducted to determine the substitutions permitted for PE in the public SHSs of Southeast Missouri. The most common substitutions for activity classes were found to be health classes and athletics. The most prevalent length of time for which athletes were excused was for the season during which they participated in a sport. These substitutions did fulfill the PE requirements. The majority of the schools permitting substitutions did so on the basis of a standard school policy and the PE directors agreed with the policy. Most schools indicated that less than 20 students were involved in the practice

of substitution. It was found that a majority of the schools released students from the PE requirement if they had some type of physical handicap. The 2 most common conditions which eliminated students from PE were heart conditions and crippling defects.

University of Southern California, Los Angeles (A. Lockhart)

420. BEN-ARI, Efraim. *A comparison between trained and untrained subjects with regards to respiratory regulation during exercises.* Ph.D. in Physical Education, 1972. 190 p. (A. Lockhart)

Ss (N = 14), 7 in each group, were tested. Exp. included continuous pedaling at 60 rpm with 50% max VO_2 and 80% max VO_2 for 5 min. each. Similar group patterns with different values were observed for PAO_2, $PACO_2$, expiration, and inpiration per breath. For the untrained group, related factors indicated hyperventilation accompanied by a greater increase in ventilation. Immediate readjustment and breathing frequency revealed different group patterns. Arterial blood analysis revealed that the untrained group, in spite of lower relative contribution of the chemical respiratory mechanism, showed higher values of alveolar ventialtion.

421. BENNETT, Roberta Sue. *Effect of direction of rotation and head position on judgment of the inverted vertical.* Ph.D. in Physical Education, 1972. 129 p. (A. Lockhart)

The role of proprioceptive information arising from the cervical region on the ability to judge position in space was studied. The specific problem was to determine the effects of 3 fixed head/neck positions (dorsiflexion, extension, and ventroflexion) and 2 directions of total body rotation (forward and backward) on ability to judge orientation of the trunk. Female Ss (N = 30) were passively rotated toward the inverted vertical. Each indicated when she perceived her trunk to be directly inverted. Data were anlayzed by use of ANOVA for a 2 × 3 factorial design and by ANOVA for simple main effects. An interaction between head position and direction of rotation was found, at the $p < .05$ level, for both absolute and directional error. Dorsiflexion of the head/neck complex resulted in more accurate judgment than did ventroflexion, during forward rotation. Ventroflexion resulted in more accurate judgments than did dorsiflexion, during backward rotation. Findings were discussed in relationship to the righting reflexes associated with tilting the body away from upright vertical.

422. BOGARD, Dolores Ann. *Visual perception of static and dynamic two-dimensional objects: A cross-sectional study.* Ph.D. in Physical Education, 1971. 87 p. (A. Lockhart)

The ability of 4 age groups to perceive 2-dimensional objects in a static and in a dynamic situation was studied. The age groups were: ELE 1 (6 to 7 yr.); ELE 6 (11 to 12yr.); College (18 to 22 yr.); Elderly Adult (66 to 79 yr.). The Southern California Figure-Ground Test was used and adapted to a dynamic condition. Significant differences were found between performance on the static and dynamic tests of visual perception across all age levels, with fewer errors made on the dynamic tests and in performance on the static and dynamic tests between each of the groups. There was a low positive r between static and dynamic tests of visual perception. Performance on tests of figure-ground tended to improve with age and experience. Motor development programs should include experiences in identifying and reacting to moving objects as well as to static objects.

423. CALLAGHAN, John Lawrence. *An analysis of the role of sport in England and the United States.* Ph.D. in Physical Education, 1971. 340 p. (J. T. Hall)

Identification of differences in attitude toward the role of sport in society in England and the U.S. was undertaken. A questionnaire containing 48 statements pertinent to the role of sport was constructed. American (N = 781) and English (N = 440) students indicated attitudes toward each statement. Factor analysis, significance tests, and X^2 were used to examine the data. Four statements produced a direct attitudinal difference between nations. English Ss agreed that "Sport is a ritual expressing the basic need to fight," and "Among nonparticipants sport is all too often likely to create irresponsible mass-hysteria," while Americans registered disagreement. U.S. Ss concurred that "The main value from sport is the attainment of fitness," and "Sport should be used to train individuals to face the personal problems of everyday life," contrary to the English attitude. Seven subgroups were investigated: PE majors, students in other disciplines, undergraduates, males, females, sports oriented students, and nonlettermen. With each, attitudinal differences toward at least 1 of the aforementioned roles were apparent. The conclusion was that significant differences exist in the way English and American students perceive the role of sport in their lives.

424. CARR, Jane Ann. *Effect of starting condition and position objective on judging position at the shoulder joint.* Ph.D. in Physical Education, 1972. 154 p. (A. Lockhart)

Accuracy of position judgment under various combinations of position objective and starting condition was studied, to ascertain role of varying patterns of information from joint receptors. Three position objectives were used: 45°, 90°, and 135°. Four starting conditions were utilized: 0°, 180°, random constant, and random variable. ANOVA for a 4×3 factorial design was used. Analyses were made in terms of both absolute and directional error. The interaction of position objective and starting condition was significant. The 135° position objective accounted for the greatest amount of error in judging position regardless of method of initiating the positioning reaction. The 0° and 180° conditions, although similar, were different from the random constant and random variable conditions. Analyses of directional error substantiated absolute error findings.

425. **CHAPMAN**, Elizabeth Anne. *Effects of exercise upon joint mobility of young and old men.* Ph.D. in Physical Education, 1972. 67 p. (H. deVries)

Age differences in the resistance of the M-P joint of the index finger to passive oscillatory movements and improvement of the mobility of this joint through an exercise program were investigated. Resistance was measured by a strain gauge attached to the oscillating lever. Ss were 20 boys (15-18 yr.) and 20 men (63-88 yr.). All were pretested as to the strength of the index finger and the stiffness of the M-P joint. A 6-wk. exercise program followed. At the end of the training program, both groups were retested. The 2 groups were different in the resistance measure, but not in the strength measure. There were increases in strength and decreases in resistance for each group. Both young and old groups responded similarly to the training program, indicating that older groups may be more responsive to training than previously thought.

426. **CHENEY**, Gay Ellen. *From authenticity to art: A search for significance in choreographic process.* Ph.D. in Physical Education, 1970. 260 p. (L. Ellfeldt)

The nature of the choreographic product and of the process by which it evolved were studied by examination of first-hand experience. The primary problem was that of evolving a significant choreographic product. Secondarily, it was defining criteria for the evaluation of significance. It had been hypothesized that 2 characteristics of a significant product are authenticity and qualification as art; that a body-centered orientation to the choreographic process would increase the possibility of results that are authentic and qualify as art. The dances were performed and evaluated. Art and authenticity are characteristic of the significant choreographic product. The body-centered approach produced neither authentic nor art products, until balanced by by consciousness-mind. Activities such as technique and composition positively affected the outcome, while experiences in art and therapy were inappropriately timed in relation to the choreographic work, serving to add superfluous stimulation and confuse the issues. The study concludes that attaining the condition of authenticity is prerequisite to the production of significant art.

427. **CULLUM**, William. *An investigation of selected aspects of the doctoral degree in physical education.* Ph.D. in Physical Education, 1971. (J. T. Hall)

General information concerning the doctoral program in PE were examined and compared with the recommendations of a panel of PE experts. Admissions: Experts and institutions agreed on use of the GRE as an admission tool. However 80% of the experts recommended: personal interviews, previous work experience, a major field screening exam, and a policy of no doctoral level course work without admission. These practices were in effect in 30-50% of institutions surveyed. Curriculum options: minor area and foreign language requirements were the rule in practice. The panel tended to disagree with these policies. Knowledge of statistics and research methods was required by surveyed institutions. Experts agreed. Candidacy: institutions and experts agreed that a general exam should be used. Thesis or dissertation: required by all institutions and recommended by panel of experts. An oral defense is in general use and is recommended. There was some disagreement as to its purpose. There was also disagreement as to the most important goal for doctoral degrees in PE. In conclusion, practices and policies in doctoral programs were not consistent with recommendations of panel of experts.

428. **DAMON**, Ernest Lyle. *An experimental investigation of the relationship of age to various parameters of muscle strength.* Ph.D. in Physical Education, 1970. 119 p. (H. deVries)

Thirty young men (20-31 yr.) were compared to a group of 30 older men (55-71 yr.) on various parameters of the voluntary muscle strength of the elbow flexor group. Isometric strength was determined by the use of cable tensiometer. Concentric and eccentric strength determinations were made by summing the gravital component and the inertial component of each effort. The young group's M for max isometric, concentric, and eccentric strength were significantly greater than those of the older group. This was so when isotonic measurements were determined with max instantaneous acceleration values and also when they were determined by average acceleration produced during the positive acceleration phase of the effort. Age differences beyond those due to isometric strength differences were examined. These corrected isotonic values produced M which were significantly higher for the young Ss. Force-velocity relationship curves were different for the 2 groups with the younger Ss' Ms the greater in each case. Velocity values corrected for the isometric strength differences showed M velocities for the young group significantly greater than those for older group, for lighter masses.

429 **DAVIS, Robert Ward.** *The fear experience in rock climbing and its influence upon future self-actualization.* Ph.D. in Physical Education, 1971. (H. Slusher)

The experience of fear, as encountered in "rock climbing," and its bearing on an individual's self-awareness and self-actualization were studied. Humanistic concerns about the problem of "loss of self," were explored. The concept of sport with its unique "unreal" quality, "risk sports," self, self-awareness, and self-actualization were all explored. The approach was existentially oriented and the technique used was holistic. A questionnaire was sent to graduates of Outward Bound courses. It included a rating scale to indicate intensity of fear experienced and level of enthusiasm present as well as short verbal descriptions of feelings associated with participation. Increased self-awareness can come about through participation in adventure-type activities; presence of "danger" and fears which accompany it attracts individuals to certain activities; conquering fear is most important to risk-takers; participants expect success; overcoming fear results in new levels of self-awareness. Educational programs containing the element of fear and the opportunity to react to this fear can be designed. The expected result of a successful participation in such programs would be "positive" personal growth.

430 **DENNIS, James Mercer.** *Administrative behavior of successful and unsuccessful athletic directors in small colleges and universities.* Ph.D. in Physical Education, 1971. 246 p. (J. T. Hall)

Successful (N=45) and unsuccessful (N=50) small college AD's responded to a responsibility, authority, and delegation scale, a work analysis form, and a leadership opinion questionnaire. Success was measured in terms of the win-loss record of the college's athletic teams. On the RAD Scale, successful and unsuccessful directors tended to perceive their roles in similar ways. Time ranges indicated by the majority of both groups on the WAF were essentially the same for each activity. The following were found to rank highest: teaching, coaching, instructing, training; reading and answering mail; and preparing and writing reports, orders, memoranda. No difference was found between the M scores of successful and unsuccessful directors in either of the 2 dimensions (structure and consideration) measured by the LOQ. Success or lack of success of small college athletic teams does not necessarily reflect differences in administrative behavior of the AD's involved.

431 **DICKINSON, Ralph Vern.** *Comparison of interference and decay during short term motor memory.* Ph.D. in Physical Education, 1970. 129 p. (A. Lockhart)

Ss learned a criterion task which was to reproduce a 45°, 5-in. downward movement. A proactive inhibition group learned an interference task prior to criterion, that of reproducing a 135°, 25-in. upward movement. Two retroactive inhibition groups learned this same task immediately after criterion task. One of the retroactive inhibition groups had a wt. attached to the arm during the interference task. Learning of the criterion task was the only requirement for the decay group (N=35 each group). Comparisons on retention of the criterion task were made for all 4 groups 2 min. after learning. Three variables were analyzed by ANOVA after reproductions of movement: position accuracy, direction of movement accuracy, and extent of movement accuracy. No difference between groups on the learning scores of the criterion task was found. After the 2-min. retention period the 2 retroactive inhibition groups showed significantly more forgetting than the decay and proactive inhibition groups. Interference causes more forgetting than decay during short term motor memory, which may indicate that short term motor memory and short term verbal memory follow the same general laws.

432 **DUFFY, Alice Marie.** *Projection in dance.* Ph.D. in Physical Education, 1972. 108 p. (L. Ellfeldt)

This study sought to identify attributes, elements, or qualities of projection, and then to examine the process of experiencing these using a phenomenological approach. Eighteen performances of dance as an art form were attended where the investigator might experience projection as a member of the audience, and finally, a descriptive analysis was undertaken. The experience of projection has the unity of the viewer with the presentation of man as a generator and inhibitor of force. The essence of dynamic modes was generation of energy and force inseparable from time and space. Essence of the experience of projection as felt through kinesthesia and perception as a whole, was generation of change. The necessary conditions which existed for projection to occur was presentational clarity in relational modes of experiencing, such as concurrence, sequentiality, spontaneity, reciprocity, and cumulativeness.

433 **EMERY, Leonore Lynne Fauley.** *Black dance in the United States, from 1619 to 1970.* Ph.D. in Physical Education, 1971. 493 p. (L. Ellfeldt)

The dance of the Afro-American was traced from aboard the slave ships through West Indian dance to contemporary concert dancers of 1970. Both sacred and secular dance were examined on the southern plantations, in the north, and in New Orleans. The influence of Afro-American dance in minstrelsy and the theater was also investigated. In the culture of the black American, dance played an important and continuous role, and much more of the African heritage remained in this dance than heretofore suspected. Afro-American dance has been a predominant influence on contemporary American social dance. Images developed by minstrelsy dominated the black dancer as entertainer for nearly 100 yr. and these minstrel-stereotypes were supported and strengthened by dance critics through the mid-1960's. "Negro dance" and "Negro dancer" were terms developed by white critics in an attempt to separate and categorize dancers solely on the basis of skin color.

434. **EVANS**, Steven Joe. *An electromyographic analysis of skeletal neuromuscular fatigue with special reference to age.* Ph.D. in Physical Education, 1970. (H. de Vries)

Rate of skeletal neuromuscular fatigue in a group of 32 elderly males and 32 SHS males was compared. Differences in max voluntary contraction (MVC) were controlled. Neuromuscular fatigue was defined as the rate of increase of integrated MAP activity brought about by recruitment of additional motor units and/or increase in frequency of contraction of those motor units in maintaining a constant isometric contraction. Seven fatigue tests with workloads of 20, 25, 30, 35, 40, 45, and 50% MVC were used. Alinearity in 7 of the 14 group M regression liens was the scatter due to the presence of several linear subgroups. Therefore, the group M fatigue rates (MFR) were assumed to be linear. After adjustment of the data on the basis of initial fatigue level (a), the elderly group demonstrated a significantly greater MFR at all levels of MVC except 50%. The indication that the MFR was a function of a ($r=0.99$) suggests that over a longer period of time the mathematical nature of the EMG integral-time fatigue function may be exponential. The high a-MFR correlation suggests that as an individual becomes more fatigued, the rate of fatigue increases.

435. **FREELAND**, Thomas Edward. *Heart rate response to stress: A mathematical model.* Ph.D. in Physical Education, 1971. 209 p. (K. Lersten)

Two mathematical models of HR response to selected stress were synthesized. Both were based on the conservation of energy: 1 model was designed to use basic data which did not require transformation of any type, while the other required the solution of unique problem sets in order to derive the parameter estimates which were used in the analog. Data relating to HR response were collected and analyzed (N=36). Ss were required to perform a PWC_{170} test (Sjostrand technique) on a Monarch bicycle ergometer. Effectiveness of the analogs was assessed on the bases of observed HR response curve. One model was rejected. An analysis of the 2nd model ($y(t)=awe$ exp $[-b/t$ exp $(c)]$ led to the conclusion that HR response to stress may be described and predicted within an acceptable margin or error (less than 5%) by means of a mathematical model. In this model $y(t)=$ HR at time (t), (a) is equal to a constant, (w) is equal to stress, (e) is equal to the base of a natural logarithm, (b) is equal to a constant, (t) is equal to time, and (c) is equal to a constant.

436. **HARPER**, William Arthur. *Human revolt: A phenomenological description.* Ph.D. in Physical Education, 1970. 218 p. (H. Slusher)

Three tools were used to describe human revolt: the writings of Albert Camus specific to the question of human revolt; the sport of sky diving was examined as a possibility for an instancing of human revolt; the radical and scientific method of phenomenology, as understood by Edmund Husserl, provided the method of the study. Derived from Camus' phenomenology were 3 guidelines inextricably bound up with the idea of revolt: the absurd, hope, and death. It was revealed that it may be possible to uncover truths about revolt outside the absurd walls, that we have no good reason to reject hope, and that we must focus upon revolt as a protest against the irrevocable necessity that "I will die." These 3 themes merged into a complex unity which allows the man who sky dives the opportunity to be man in revolt. It was seen that his revolt is an accentuation of the absurd, a proclamation of hope, and a confrontation with death.

437. **JENSEN**, Marilyn Anne. *Computer familiarization program: Its influence upon municipal recreation employees.* Ph.D. in Physical Education, 1971. 171 p. (J. T. Hall)

Subjects were municipal REC employees (N=14 exp., 92 control). The exp. group completed a self-directed computer familiarization program. The findings were: both groups indicated a significant change in a number of expressed attitudes toward computer utilization.

438. **JESSUP**, George Terrill. *The relationship between integrated EMG fatigue curve and resting,*

exercise and postexercise blood flow in the human forearm. Ph.D. in Physical Education, 1971. 122 p. (G. Logan)

Male Ss (N=40) were divided into 2 validation groups, blocking on max voluntary contraction. Group 1 data were used for 1st order partial *r*s between integrated EMG fatigue curve and resting blood flow, 1-min. exercise blood flow, immediate postexercise blood flow, and slope coefficients for 5- and 10-min. blood flow recovery rates, controlling for selected variables. Two multiple regression equations were formed for each blood flow parameter. The best prediction equation was chosen based upon the lowest M absolute residual value and used to predict integrated EMG fatigue curve from the group 2 data. No differences were found between group M for any of the exp. variables at the $p < .10$ level. Differences between criterion and predicted EMG fatigue curves, using the Kolmogorov-Smirnov Test, were not significant at the $p < .30$ level for 1st resting blood flow, 1-min. exercise blood flow, immediate postexercise blood flow, and 5-min. blood flow recovery rate. Positive relationships were found between the rate of neuromuscular fatigue and resting blood flow; the rate of neuromuscular fatigue and 1-min. exercise blood flow, and neuromuscular fatigue rate and immediate postexercise blood flow. A negative relationship between the rate of neuromuscular fatigue and 5-min. recovery blood flow rate was found.

439. **JOHNSON, Joann Marlene.** *The relationship between work capacity and motor learning.* Ph.D. in Physical Education, 1969. 88 p. (A. Lockhart)

Women Ss (N=40) practiced a double ball tossing task 3 times a week. Exp. Ss (N=20) concurrently participated in a physical conditioning program designed to improve physiological work capacity. Criterion measure for physical work capacity was predicted max O_2 consumption. ANOVA showed no difference in performance of the motor task between groups. All 40 Ss improved on the motor task at the .01 level, linear and quadratic trends accounting for 95.4 and 2.6% of the variance. Both groups increased significantly on max O_2 consumption. No difference was found between groups. All variance was accounted for in the linear trend. The treatment interaction value was at the .05 level which indicated that the exp. group improved on this parameter at a faster linear rate than did the control group.

440. **KLEIN, Kathryn Louise.** *Patterns of error in learning balance tasks.* Ph.D. in Physical Education, 1971. 182 p. (K. Lersten)

Ss practiced the Balance Board, Dynabalometer, and Stabilometer in 1 of 6 orders of practice. Variables measured on each trial were: performance time and number of errors, time in error, and time off-center per side. Individuals with predominantly or purely 1-sided laterality appeared more often among the highest performers on the Balance Board and Stabilometer. Ss with a mixed laterality pattern and ambidextrous foot usage were more successful on the Dynabalometer. With few exceptions, the highest Ss were significantly better than the lowest at both beginning and final stages of practice on all performance variables. There were no differences between the 2 groups in number of errors per side on the Dynabalometer, or on the 1st stage of practice on the Stabilometer. The lowest Ss reduced the time down per side only on the Stabilometer while the highest subjects reduced the time down per side generally on all tasks. Both groups improved in number of errors per side on all 3 tasks, except for the right side on the Dynabalometer. Degree of success attained on a motor task seems related to quickness in making movement adjustments and to freedom from the influence of laterality in structuring movements. Lateral preferences may influence the patterning of movement in bilateral-motor skills.

441. **KORHONEN, Juho Antero.** *Concepts of school health programs recommended for professional preparation in health education in the United States; Implications for higher education in Finland.* Ph.D. in Physical Education, 1969. 206 p. (E. Smith)

It was hypothesized that concepts abstracted from American school health program textbooks are considered equally relevant by the American and Finnish juries for inclusion in professional preparation programs of secondary school HE teachers in these 2 countries. A topical analysis of American health textbooks was conducted (N=10). Data were reduced to concepts and a questionnaire was developed. Finnish and U.S. HE experts (N=18 in each group) used a 5-point scale to evaluate each item as to its relevance for inclusion in professional preparation programs of secondary school HE teachers in his country. Analysis of differences between the 2 juries was by means of the Kolmogorov-Smirnov 2-sample test for small samples. Of the 75 concepts, 64 were considered desirable by 77% of Finnish jurors, and 59 were held desirable by 77% of the combined jurors. It was concluded that the 2 juries were in close agreement on the desirability for inclusion of these 59 concepts in professional preparation programs for secondary school HE teacher of both countries.

442. **KRETCHMAR, Robert Scott.** *A phenomenological analysis of the Other in sport.* Ph.D. in Physical Education, 1970. 141 p. (H. Slusher)

A subjective reflection on the author's experiences in the sports of baseball, basketball, and cross country was undertaken. Five "Others," including opponents, teammates, umpires or official, coaches or managers, and spectators, were found to be most significant in the competitive experience. Characteristics of the 3 sports contribute to different relationships between persons. One's personal perspective on activity perpetrates different experiences within diverse or even identical environments. The notions of opposition, relevant facticity, and arbitrariness were encountered through this process. Because opposition is the only concept which "demands" an "Other" for its intelligibility, it was selected for the subsequent objective phenomenological analysis. Opposition is based upon a notion of dichotomy. Spatiality and temporality are 2 factors which provide fundamental recognitions of this "otherness." It is theoretically possible for dichotomy to be static. However, dichotomy required the notion of variation. A variable dichotomy might be a compatible one. Opposition must include the concept of incompatibility. This facet is recognized through the actions of the "Other." An inanimate "Other" cannot serve as the "Other" in opposition. One opposes human significations in relationship to objects such as mountains. Experiences of an ambiguous "Other" are possible through the recognition of both actual and virtual "Others."

443. KUSSEROW, Tebb. *Conceptions of school sport in the United States and Australia: A comparative analysis of California and Victoria.* Ph.D. in Physical Education, 1971. 182 p. (E. Metheny)
Opinionnaires regarding interschool sport were developed and administered to selected educators in the southern section of the California Interschool Athletic Association and the parallel organization of Melbourne, Australia. These were designed to examine indigenous expression of educational ideas about interschool sport. Comparative analysis provided evidence of 3 ideational patterns. The 1st pattern: general agreement about man's nature and needs, theoretical principles of secondary education, and the educational values of sport. Internal disagreement concerning the nature of the relationship between interscholastic sport and physical education was found. The 2nd pattern of thought showed agreement that educational and interscholastic sport objectives differ respectively from the objectives of professional sport and from those of PE and on selection and evaluation criteria. Differences were reflected by: the order of program objectives, the scope and order of activities; and ideas pertaining to the issue of equal standards. There was general agreement about the role of the coach. A 3rd pattern of thought was denoted by ideational differences regarding interscholastic sport organization. These differences were implicit in the ideas that defined the nature, function, and organization of the CIF, SS, and the MHSSA. The indigenous patterns of thought that theoretically define school sport as a component of secondary education reflect a common attitude toward a fundamental set of ideas about man, secondary education, and athletics.

444. LEWIS, Madalynne Solomon. *A philosophy of Finnish women's physical education as represented in selected writings of Elin Kallio, Elli Bjorksten, and Hilma Jalkanen.* Ph.D. in Physical Education, 1970. 499 p. (L. Ellfeldt)
Literature examined consisted of books, periodicals, and manuscripts found in Finland during 4 study-trips. Data were also obtained from personal interviews, correspondence, and unpublished research. From its inception, Finnish *naisvoimistelu* (women's PE) was developed by and for women. Women in Finland received gymnastics teacher training before men, and female gymnastics was planned for and taught by women. Eclecticism has stimulated progress in *naisvoimistelu*, involving selective adaptation of new ideas. High standards for professional preparation and professional advancement were goals. Open-minded research has always been encouraged. Finnish women physical educators have distinguished between *naisvoimistelu* and dance, recognizing that the goals and purposes are different.

445. MEARS, Ivan George. *A study of the organization and administration of intercollegiate athletics in church-related colleges and universities of the United States.* Doctor of Education, 1970. 175 p. (R. Perry)
Data from questionnaire replies received from 263 church-related schools were analyzed. Intercollegiate athletics were part of the general education program in 89% of cases. Only 56% had a definite program of evaluating their athletic program. In 57% of the schools the AD and chairman of the PE dept. were the same person. In only 19% did the athletic committee have complete voice in formulating athletic policy, though 89% had such a committee. Almost half of the schools used 2.00 (on a 4-point scale) as the GPA needed for eligibility. The coaches in 92% of the schools were hired as regular members of the teaching staff. The 4 main sources of money for intercollegiate athletics were the school, gate receipts, student fees, and unspecified other sources. Some 72% of the schools shared equipment between their PE and athletic depts.

446. MUSHER, Carole Lucille. *A cross sectional study of the personality factors of girls and women in competitive Lacrosse.* Ph.D. in Physical Education, 1969. 84 p. (K. Lersten)

A sample was drawn from the total competitive Lacrosse population at the JHS, SHS, college, association, and national levels. HS Personality Questionnaire or Sixteen Factor Personality Questionnaire, Form A, was administered to all Ss. Each sample was different from its norm on more than 1 factor. Lower age level and less experience in the competitive aspects of the sport did not result in differences on fewer items. The total competitive Lacrosse group was characterized as more reserved, intelligent, assertive, happy-go-lucky, toughminded, and experimenting than the norm. The samples were different from each other on: intelligence, conscientiousness, self-assurance, control, tenseness, and forthrightness. However, no multiple comparisons were significant and no pattern of differences between samples was found on the significant factors. This study suggests that personality development may be independent of competitive sports participation; that self selection of the individual into competitive sports may be determined by personality factors that the individual already possesses.

447. NAPIER, William James. *The sports section of the Los Angeles Times: 1898, 1918, 1943, 1968.* Ph.D. in Physical Education, 1971. 136 p. (E. Metheny)

All printed materials which referred to sport-type activities, as published on the front page or in the sport section of the Los Angeles Times during the 4 yr. under study, were classified by typographic categories, sport, and level of participation. Between 1898 and 1968, the amount of sport news published increased markedly. In 1898 and 1968, no war-related sports columns were found. Those for 1918 were concerned with manpower, sport values in wartime, and fund raising effects. In 1943 war-related stories dealt with sport as a morale raiser. In all years studied, 60% of the space or more was devoted to professional sports (M = 76%). Horse racing, boxing, baseball, football, track and field, and golf received a preponderance of space over the years sampled. Cycling was prominent only in 1898, tennis in 1918, basketball and ice hockey in 1968. The findings support the hypothesis that patterns of interest in sports during 4 wartime periods as evidenced by the content of the sport section of a metropolitan newspaper, differ from each other in describable ways.

448. O'CONNOR, Constance Ann. *A study of personality needs involved in the selection of specific leisure interest groups.* Ph.D. in Physical Education, 1970. 141 p. (J. T. Hall)

Members of 9 leisure interest groups were given the Edwards Personal Preference Schedule. Scores were significantly high for each group in certain categories. Hikers: autonomy, exhibition, dominance, change, intraception, achievement, and heterosexuality; Great Books participants: intraception, exhibition, succorance, heterosexuality, autonomy, and achievement; Barber-shoppers: heterosexuality and affiliation; Hospital volunteers: heterosexuality, dominance, affiliation, intraception; Y-Wives: exhibition, dominance, change, aggression, autonomy, heterosexuality; Acting group members: achievement, intraception, succorance, dominance, change, aggression, and heterosexuality; River tourers: achievement, exhibition, dominance, change, aggression, and heterosexuality; Toastmistresses: achievement, exhibition, autonomy, dominance, change, aggression, and heterosexuality; Women golfers: exhibition, intraception, dominance, and heterosexuality. A relationship existed between personality need and choice of leisure interest groups.

449. PAGEOT, Jean Claude. *Factors influencing the leisure interests of senior citizen center members.* Ph.D. in Physical Education, 1972. p. (J. Tillman Hall)

The Edwards Personal Preference Schedule, the Guilford-Shneidman-Zimmerman Interest Survey and a demographic questionnaire were administered to 132 men and women, members of senior citizen centers. In the total sample, the variables source of income, occupation, annual income, education, type of household, age, religion, hours of employment per week, number of years of retirement, working status, mobility, and health were related to the dependent variable, the leisure interest. Four of these variables were significant at the .01 level of confidence: education, working status, annual income, and marital status. The findings revealed a relationship between socioeconomic factors and leisure interests. The hypothesis stating that, among senior citizens, personality needs were not as determinative of types of leisure interests as were socioeconomic factors was supported.

450. POWELL, Suzanne Marilyn. *Meaning in a dance form.* Ph.D. in Physical Education, 1969. 111 p. (E. Metheny)

College students (N = 30) learned the dance Doudlebska Polka; attempted to represent meanings found the dance in 3 graphic forms focusing on configurational patterns, analoguous forms suggested by the dance, and ideas and feelings about other cognitive-affective-aspects of the experience. Ss viewed 6 composite representations, discussed their reactions to them in a tape-recorded interview, and wrote a brief evaluation. A 2nd group (N = 20) had the same set of experiences, but viewed composites of the 1st group's graphic representations rather than doing their own. Ss expressed awareness of concepts not previously recognized in regard to relationships between dance and graphic representation. They reported that the process of creating graphic forms led to greater awareness of, and more involvement in the movement of the dance, and that the combined experience induced more interest and understanding. Ss reported that they were more aware of the configurational patterns of the dance, and that it is difficult to recognize or define ideas and feelings about a dance in graphic designs created by another. Findings support the conclusions that college students can experience, symbolize, and verbalize about the meanings they find in their own experiences with dance forms.

451. RENICK, Joby.

452 ROBY, Mary Pavlich. *The significance of sport in ancient Greece as depicted through the historic novels of Mary Renault.* Ph.D. in Physical Education, 1970. 152 p. (E. Metheny)
Novelists have used sport as an incidental thread or to develop a theme or a character. They can often suggest with a word or phrase the significance which a participant finds in sport. Mary Renault used an incidental sport theme in many of her historic novels about ancient Greek society. The novels *The King Must Die*, *The Last of the Wine*, and *The Mask of Apollo*, were studied. Passages relating to sport were extracted and classified into categories of similar topics. These were interpreted for their meaning about sport and the distillate was recorded as a finding. Findings were synthesized and general concepts about sport were derived from each novel. Synthesis led to identification of 34 concepts. Many were concerned with similar topics, such as honor, women, and aspiration. Concepts differed in varying degrees due to different historic settings and themes of the novels.

453 ROCKER, Jack Leonard. *Major themes of undergraduate professional preparation in physical education from 1860 to 1962.* Ph.D. in Physical Education, 1971. 228 p. (L. Smith)
Analysis of 3 national conference reports (1948, 1959, 1962) resulted in the identification of 6 major themes of undergraduate professional preparation in PE in the U.S. related to: time, place, authorities, purposes, curricular experiences, and research methods. Numerous approaches to curricular planning as well as techniques, were suggested. Themes, approaches, and techniques were organized in a checklist of 75 concerns. Using content analysis, evidence was gathered from selected literature which revealed origin and development of the checklist items during the years 1860-1962, appearance of additional items, and disappearance and reappearance of concern for items. The results: 1860 to 1899 was the beginning period in which the 6 major themes were 1st expressed and in which 70 of the 75 checklist items appeared as concerns; 1900-1962 was a period of development and refinement; new concerns took their places in an additive fashion rather than replacing older concerns; and during the last 20 yr. of the 19th century, leaders in PE promoted alternatives for leadership preparation, governing authority, and research methods which tended to inhibit freedom conducive to change from 1899.

454 SCHAAFSMA, Frances Marie. *The effects of varied amounts of verbal instruction upon the learning and performance of selected tasks of accuracy.* Ph.D. in Physical Education, 1968. 165 p. (A. Lockhart)
Two accuracy tasks of differing complexity, were selected: a Lacrosse shot (less complex) and a jai alai overarm throw (more complex). Three different amounts of verbal information about the execution of each task were prepared for instructional use. These were classified as: minimum, moderate, and maximum. Three groups of 24 college women were selected. Each group was given 9 instruction/practice sessions which included a filmed demonstration, tape recorded verbal instruction in varying amounts, and 10 practice trials on each of the 9 sessions. Analysis of the data revealed no variance among the performances of groups for either task at any stage of learning. The group which received the max amount of information, in both tasks, manifested a lack of orientation to the demands of the tasks during early trials. Ability to utilize verbal information was partially dependent upon the Ss capability. The amount of information utilized was inversely proportional to the complexity of the task. Ability to profit from information was related to the amount of experience with the task. The amount of verbal information about task execution which can be utilized by the learner of a motor task depends upon learner capability, experience with the task, and task complexity.

455. SHEARER, Helen Lorraine. *Labyrinthine disfunction and a quantitative ataxia test battery.* Ph.D. in Physical Education, 1971. 134 p. (A. Lockhart)
Two groups of matched Ss (N=15 each) were used. The exp. group Ss were labyrinthine defectives by virtue of function of cranial nerve VIII. An ataxia test battery was developed and administered to all Ss on 7 consecutive days. It included Classical Romberg; Sharpened Romberg; walk a line, eyes closed; walk on floor, eyes closed; rail standing, 2.25 in. rail, eyes open; rail standing, 2.25 in. rail,

eyes closed; and dynabalometer. Each group was considered to be homogeneous. Comparisons between the 2 groups on day 1 performances, and the 7 day total performances were made. Data were analyzed using Mann Whitney U and coefficients of r. Labyrinthine defectives could perform favorably when visual cues were afforded. Balance performances differed significantly without visual cues and were therefore considered vestibular sensitive. Tests which were vestibular sensitive and produced low interest were the Sharpened Romberg; walk a line, eyes closed; walk on floor, eyes closed; and rail standing, 2.25 in. rail, eyes closed. These appear to constitute a multidimensional test battery for screening for labyrinthine disfunction. Least vestibular sensitive tests were the Classical Romberg; dynabalometer; and rail standing, 2.25 in. rail, eyes open.

456. SPRING, Evelyn Lee. *Professional preparation in recreation: Undergraduate education pertinent to leadership with older adults.* Ph.D. in Physical Education, 1968. 171 p. (J. T. Hall)

In a review of catalogs from 107 institutions offering undergraduate REC curricula, all available courses were identified which contained materials pertinent to leadership with older adults. Data were received from 67 of 107 colleges by use of a questionnaire. Respondents verified pertinent course offerings and recommended additional academic content for undergraduate majors relevant to leadership with older adults. Recommendations were also obtained from 18 selected authorities. Eighty-one percent of institutional respondents reported 223 courses relevant to aging. Thirty-seven were specialized courses and 186 contained special content emphasis on aging. Specialized courses were predominantly offered outside the major. Courses with special content emphasis were required within the major. The focus of courses was on sociological aspects of aging. Within the major, emphasis on leadership methods and techniques were predominant. Opportunities for practical experience with older adults were typically elective. It was concluded that current educative opportunities for undergraduate majors in REC pertinent to leadership with older adults are inadequate and in need of improvement.

457. STONE, Roselyn Elizabeth. *Meanings found in the acts of surfing and skiing.* Ph.D. in Physical Education, 1969. 136 p. (E. Metheny)

The problem was to identify and compare the kinds and sources of meanings found within the acts of surfing and skiing by means of a systematic analysis of published material (1945) to April 1969) relating to the experience of these acts. A 1st-level analysis sorted the content according to: Time; Spatial Aspects; The Wave/Ski Slope; Objects; External Forces Perceived; Sounds; Events Happening to the Performer; Danger; Sensations; Emotions; Feelings; Acts Initiated by the Performer; Ongoing Acts; Thought in the Act; Competence; The Self, and Miscellaneous. Three groupings of relatedness were identified: functional, intellectually laden, and feeling-laden, of which the latter two were significant in determining the sources of meaning in the acts. The sources of meaning in surfing and skiing reduce to the following phenomena: the performer's phenomenal world, the self, competence, risk-taking, speed. The understandings derived from performer's reflections on the objects and events of surfing and skiing vary in their conceptual, affective, and emotional content. There are between-individual differences in the components of meaning recognized by performers. Sources of meaning found in the act of surfing are similar to those found in the act of skiing when their origin is within the individual, e.g., the experience of speed, danger, action, feeling state, self, and control. They are different when their origin is external to the individual, that is, those relating to the phenomenal world of wave and board or of slope, skis, and trees.

458. STUTTS, Frances Ann. *Visualization of movement forms.* Ph.D. in Physical Education, 1972. 134 p. (E. Metheny)

The study was on vision as a mode of knowing and understanding. It attempted to make sense of experience through the visual mode, specifically the visualization of movement forms. A construct of visual modalities was developed to be used in studying many movement forms. This construct was then applied to tennis. All techniques utilized in this study served to elicit information, knowledge, and understanding which was not readily susceptible to verbal codification or expression. It may be concluded that a well-designed visualization study may elicit a body of data which is not available to other techniques which might be utilized in studying movement forms.

459. SUNDLY, Jerry Arthur. *The desire to win: A phenomenological description.* Ph.D. in Physical Education, 1971. 129 p. (H. Slusher)

This study was an attempt to reveal the essential structure of meanings within experience (those of football and handball), as related to motivation. Analysis and description were based upon the phenomenological and eidetic methodologies developed by Husserl. In its most fundamental sense, desire is necessarily a desire-to-be as distinguished from a desire-to-act. One's desire to win is understood in an ontological sense as the desire-to-be-the-winner. Hence, motivation in its most fundamental sense is found in the necessary projection of the conscious ego beyond its present sense of being. Since being is specific and relative, the desire to be is expressed through conscious acts as a specific desire to be, e.g., a desire to be the winner. It is in the conscious expression of this desire that various systems of motivation are constructed, 1 of which is the desire to win. The distinguishing characteristics of this latter form include the initial act of valuing the possibility of being the winner, and the successive acts of resolving to attempt to be the winner and of attempting to be the winner. The object desired is the actualized sense of being winner, the structure of which presents itself as a possibility for experience. The identity of winner was described as those perceived characteristics which instance the concept of fulfilling the purpose of one's role as performer within the context of the particular sport.

460 SUTTIE, Sandra Jean. *The differential effects of viewing selected moving visual figure patterns on the performance of a dynamic balance task.* Ph.D. in Physical Education, 1970. 97 p. (A. Lockhart)

Ss were college men (N=48), divided into 24 groups. Testing was conducted over a 3-day period. Day 1, Ss were given practice on visual tasks and on the balance task. The balance task consisted of 60-sec. trials on the dynabalometer. The visual task was performance on the dynabalometer while viewing 1 of 4 patterns of movement of a spot of light on a black background. Light patterns were: horizontal, vertical, clockwise, and counterclockwise. Each visual pattern was viewed by each S for 60 sec, followed by 4 dynabalometer trials, performed without a specific visual task. The following day, the S practiced the combination of the visual and balance tasks under test conditions. The 3rd day scores were collected from the performances of the combined tasks. Data were analyzed by 2-way ANOVA to determine if balance performance differed while performing the 4 visual tasks. While performing the visual tasks, there was a difference among balance scores. The 2 multiple comparisons in which this difference was found were: vertical versus horizontal and vertical versus counterclockwise. No differences were found among the effects of visual order or their interaction with the specific visual task. Balance was best while watching the vertical pattern, followed by clockwise and horizontal patterns, and poorest with the counterclockwise pattern.

461 SWERKES, Barbara S. *A systems model for the development of physical education curriculum.* Ph.D. in Physical Education, 1972. 127 p. (D. Metheny)

This study provides a conceptual framework which would describe and explain the multiple variables which interact in a planning system for PE curriculum. A model was derived from the principles of the systems perspective. The model conceptualizes curriculum as a decision-making system which serves the purpose of selecting desired outcomes and designing experiences which are likely to achieve those intended outcomes. As a system, curriculum development was described in terms of input, processes, and output. Input comes from the environment. The intended output is curriculum. The primary processes whereby input is utilized to produce curriculum include: decision-making, information gathering and communication, goal-setting, planning, operationalizing, and evaluating.

462 SWIRE, Robert Dale. *Leadership considerations within selected summer recreational sports programs for urban disadvantaged youth.* Ph.D. in Physical Education, 1971. 138 p. (J. T. Hall)

Data were gathered on 13 black and 39 white leaders in 5 urban summer programs for economically disadvantaged boys. They completed biographical data sheet and 2 personality opinionnaires: The California F Scale and the Least-Preferred Co-Worker Scale (LPC). Their effectiveness was measured in terms of leader adequacy ratings, team success in REC sports, and maintenance of team attendance. Differences between black and white leader scores on the 2 personality tests and the leader ratings were tested by the Mann-Whitney U. Rank order *r*s among the variables of *F* scores, LPC scores, leader ratings, team attendance, and team success in sports competition were determined. Racial preference was not evident when comparing black and white leaders' ratings. No differences between black and white leaders existed on the authoritarian or task-group orientation scales. Task-oriented white leaders were preferred by the participants. No significant *r* was found between the 2 personality tests. A significant *r* was found between high authoritarian leader scores and the success of teams in recreational sports competition. Among black leaders, high authoritarian scores and team attendance correlated significantly.

463 TORBERT, Marianne Rothhaas. *Relationships between motor proficiency and self-concept of sixth grade boys.* Ph.D. in Physical Education, 1972. 110 p. (A. Lockhart)

Ss were 6th grade boys (N=100). They were tested on the Lincoln-Oseretsky Motor Development Scale and 8 selected gross motor tasks. The Piers-Harris Children's Self-Concept Scale was also administered. Ss who scored in the upper and lower 27% on the various motor tasks or combinations of tasks were compared to determine differences in self-concept. Relationships between motor proficiency and self-concept were demonstrated only in regard to gross motor performance tasks. Higher overall self-concept was found for boys who were proficient in the 50-yd. dash. Physical appearance self-concept was higher for those proficient in overall score on the 8 tasks or in tasks requiring power, speed, and strength. Power, speed, strength combination, endurance, or the 8 task combination was positively related to popularity self-concept. There was no difference in self-concept between the high and low proficiency groups on tasks requiring agility, balance, or manual manipulatory coordination. Proficiency in the combined gross motor tasks, combined power, speed, and strength; or endurance did not result in higher over-all self-concept.

464. VANDERSTOEP, Sandra Faye. *A comparison of single motor unit control in selected human skeletal muscles.* Ph.D. in Physical Education, 1971. 93 p. (A. Lockhart)

The nature of possible muscle-to-muscle variation in the degree of control which an individual can exert over the specific electrical activity from selected muscles, and the variation and relationships in a S to S comparison of ability to control single motor units were examined. Ss (N=9) were implanted with wire electrodes in selected muscles of the upper limb. Audio and visual display of the electrical activity transmitted to the S by a loudspeaker and an oscilloscope. A progressive training program was given to facilitate isolation and control of a single motor unit. After control of the motor unit had been achieved, a RT measure was used to determine the degree of control. Fifty trials were given at each implant site. A 2-way ANOVA for repeated measures revealed no difference in degree of control between motor units in different muscles. Separate univariate ANOVAs for each of the selected muscles. Newman-Keuls multiple comparison of Ms and rank order *r* coefficients were computed. Consistent S to S differences in single motor unit control across the selected muscles did occur in a systematic manner. Control of task specific differences to the question of generality versus specificity by the application of a universal task provides evidence in support of a general ability to control single motor units.

465. WALTON, Martha Helen. *Cognitive components in the process of solving a problem by moving in appropriate ways.* Ph.D. in Physical Education, 1969. 93 p. (E. Metheny)

Ss N(=100) divided into 4 groups performed 20 trials at 2 novel tasks, either without verbal cues, or with verbal cues after the 5th, 10th, and 15th trials. The task was projection of a football toward a target placed behind Ss back, using a "below the waist" or an "above the waist" arm pattern. Following the trials, each S tried to recall how she had structured her efforts to solve the problem of performance. These verbalizations were taped and later analyzed. They included: understanding task requirements, recognizing and using relevant aspect of past experience, developing a plan, modifying performance by intentional experiment, identifying movements of body segments, reflections about aspects of success or failure. It appeared that "identifying movements of body segments" occurred before but not during an attempt. Many of the cognitive components involved in solving a complex movement problem can be identified and verbalized.

466. WHITE, James R. *Effects of a ten-week maximal isometric program on the strength of exercised and unexercised grip flexor muscles: An electromyographic study.* Ph.D. in Physical Education, 1972. 115 p. (K. Lersten)

Fifty Ss, divided into 5 groups, performed 10 max isometric grip contractions 3 days/wk for a period of 10 wk. EMG and strength data were collected on both the exercised and unexercised arm. The results indicated that all treatments were successful in increasing grip strength in the exercised arm. The group which attempted to relax the unexercised arm experienced less grip strength improvements in the exercised arm than did the other groups. The Ss who performed the 20-sec. isometric contraction produced greater grip strength than did the 6-sec. contraction groups. All treatments produced increased grip strength in the unexercised arm. The Ss who tensed the entire body during contraction experienced greater electrical potential than did the other groups. The Ss who attempted to relax the unexercised arm experienced less grip strength improvements and displayed less electrical potential than did the other groups. The cross education phenomena did occur in this study.

467. WITCHEY, Ronald Lee. *Selected factors influencing performance in the javelin throw.* Ph.D. in Physical Education, 1972. 123 p. (G. Logan)

Cinematographic techniques were used in conjunction with the BMDO-2R-Stepwise Regression-computer program to determine the relationship between the M horizontal distance attained in the javelin throws and certain movement factors. Ss (N=32) were participants in the 1971 California CCAA, NCAA College Division, and NCAA Univ. Division Track and Field Championships. Horizontal velocity of the right iliac crest during the power phase was related positively to the more advanced thrower. When considering intermediate and beginning throws, improvement on horizontal distance depends on extension of the left knee joint at the exact moment of release. The horizontal velocity of the right iliac crest during the power phase was considered the most important factor influencing horizontal distance.

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468. **BJERKE, Deane D.** *Physiological effects of nine months of training and competition of college distance runners.* M.S. in Physical Education, 1972. 72 p. (P. Brynteson)

Eight physiological measurements were taken on 8 varsity cross-country runners at 5-wk. intervals throughout the entire 1971-72 year. The measurements of max HR, resting HR, percentage body fat, and VE$_{O_2}$ showed no changes. Max VO$_2$, O$_2$ pulse, max VE, and leg power as measured by the vertical jump all significantly increased throughout the year. The trend revealed by polynomial regression statistics was that both max V$_{O_2}$ and O$_2$ pulse showed an increase during the cross-country season, a leveling off over the winter, and slight decrease at the completion of the outdoor track season.

469. **BODE, Sandra A.** *Telemetered cardiac responses and energy expenditures of two women engaging in intercollegiate basketball.* M.S. in Physical Education, 1972. 120 p. (P. Brynteson)

Two women on the S.D.S.U. women's intercollegiate basketball team were tested using 2 home games for HR responses by telemetry. Ss were also tested for max and submax VO$_2$ in the lab. while treadmill running. During the game, one S had a peak HR of 196 bpm and the other 212 bpm. Estimated caloric expenditure for the entire game was 642°C for one S and 502°C for the other.

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470. **DAHL, Donald F.** *The relationship of jump shooting ability in basketball to selected measurable traits.* M.S. in Physical Education, 1972. 84 p. (P. Brynteson)

College basketball players (N = 24) were tested on 11 independent variables and 3 criterion variables, accuracy from 10 ft., from 21 ft., and total accuracy. Wrist strength and flexibility correlated significantly with 10-ft. accuracy; wrist strength, hand size, and hand reaction correlated significantly with 21-ft. accuracy. Jump shooting ability from both 10 and 21 ft. can be predicted from the developed regression equations.

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471. **DOWNS, Ronald C.** *The physiological and anthropometrical effects of a circuit weight training program on the endomorph, mseomorph, and ectomorph.* M.S. in Physical Education, 1972. 61 p. (P. Brynteson)

College students (N = 27) who displayed high qualities of endomorphy, mesomorphy, or ectomorph according to the Heath-Carter Somatotyping Method were divided into 3 groups and tested just prior to a 10-wk. circuit training program and immediately after. Data were collected on strength, percentage body fat, total body girth and weight, and CV fitness. ANCOVA indicated no difference among the 3 groups on the selected parameters from test 1 to test 11. Within groups changes differed from group to group.

472. **EDLUND, Connie J.** *Physiological, anthropometrical, and self concept changes in overweight college women as affected by exercise and voluntary diet.* M.S. in Physical Education, 1972. 73 p. (G. E. Robinson)

Female Ss (N = 45) with an overweight factor of 25% or more body fat were assigned to exp. and control groups. The exp. group began a 36-day exercise and jogging program and voluntary diet. All Ss kept calorie counts of all foods eaten. Wt., ht., girth, and skinfold measurements were recorded and the Tennessee Self Concept Scale was administered before and after the treatment period. As a result of a voluntary diet and exercise program there were improvements in physiological and anthropometrical variables over the control group. The results also indicated improvements in body wt. and girth measurements do not bring about concurrent changes in self-concept.

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473. **EDLUND, Larry L.** *The relationship of hitting ability in baseball to selected anatomical measurements and motor responses.* M.S. in Physical Education, 1972. 82 p. (E. Huether)

Data were collected from 18 individuals batting in 3 different situations: indoors in a batting cage against a machine, indoors in a batting cage against a live pitcher, and against regular season opponent's pitching. The Ss were tested on 11 independent variables. A multiple r of .93 was obtained for batting against regular season opponent's pitching with a combination of 4 independent variables.

474. **FLYNN, Paul D.** *Leg strength, leg power, and sprinting speed as affected by a select weight*

training program. M.S. in Physical Education, 1972. 67 p. (G. E. Robinson)

Leg strength, leg power, and sprinting speed were measured on 22 college men to compare the differences between exercising each leg individually and both legs simultaneously. Results indicate that the wt. training methods which employ training 1 leg at a time and both legs simultaneously will improve leg strength and power. There is also an indication that exercising each leg individually is better for the development of leg strength than exercising both legs simultaneously. Neither method significantly improved sprinting speed.

475. **IVERSON**, Sister Janice. *Attitudes, knowledge, skill, and physical fitness of girls as affected by two different methods of class scheduling.* M.S. in Physical Education, 1972. 124 p. (G. E. Robinson)

SHS girls ($N = 45$) were assigned according to their class schedule to 1 of 2 groups for 18 wk. One group followed a traditional class schedule while the other group followed a flexible schedule. Results revealed that both groups had favorable attitudes toward PE but that the stabilized group showed an improvement in attitude ($p < .05$). Neither group differed in skill, fitness, and knowledge.

476. **LESKOSKE**, Joseph A. *A comparison between selected weight training exercises and ring machine training for the development of iron cross strength.* M.S. in Physical Education, 1972. 69 p. (G. E. Robinson)

Volunteer fresh. males ($N = 35$) were assigned to 3 groups which participated in the 9-wk. study. Group 1 exercised on the Universal Gym, group 2 on a special ring machine, and group 3 was the control. ANCOVA revealed both exp. groups improved in iron cross strength over the control with no difference between the 2 exp. groups. No Ss were able to actually hold an iron cross.

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477. **NELSON**, Gary D. *Effects of varying training programs on the development and maintenance of different levels of strength and endurance.* M.S. in Physical Education, 1972. 55 p. (P. Brynteson)

Forty-six univ. male Ss were initially tested (test 1) for strength and muscular endurance and were divided into 5 groups which all trained 3 days/wk for 5 wk. After test 2, group 1 stopped all workouts, group 2 worked out only once/wk for the next 4 wk. and groups 3, 4, and 5 continued to work 3 days/wk. After test 3, groups 2 and 3 stopped training, group 4 worked out once/wk and group 5 continued to work out 3 days/wk for an additional 4 wk. In test 4, groups 3, 4, and 5 were retested. Results revealed that after 5 wk. and 9 wk. of continued training, 3 days/wk and 1 day/wk were both significantly better than no training; however 3 days/wk was not better than 1 day/wk.

478. **RIESSELMAN**, James W. *The effects of a collegiate wrestling season of selected physiological measurements.* M.S. in Physical Education, 1972. 64 p. (P. Brynteson)

Nine varsity collegiate wrestlers were tested 5 times throughout an intercollegiate wrestling season. Results revealed that muscular endurance improved throughout the season, decreases occurred in wt. and percentage body fat, and cardiovascular fitness improved until midseason and thereafter began to decline.

Southern Illinois University, Carbondale, Illinois (R. Knowlton)

479. **AL MUFTI**, Widad. *The effect of the use of a selected incentive upon improving performance in shooting free throws in basketball.* M.S. in Physical Education, 1972. 119 p. (C. West)

Performance of shooting free throws was measured for 65 soph. girls who were majoring in PE at SIU. Thirty-six Ss participated in the exp. groups and 29 Ss participated in the control groups. Data were collected during 2 pretest sessions—Ss shot 15 free throws each day; 4 practice periods—Ss shot 10 free throws each day, and 2 posttest sessions—Ss shot 15 free throws each day. Ss in both groups were told that success in shooting free throws would constitute 10% of the final grade of the course. A selected incentive was introduced to the exp. groups prior to practice. These Ss had the opportunity to select the scores of the best 3 days of practice and substitute the selected scores for final scores if practice scores were higher than final scores. Data were analyzed by the use of a 360-70 IBM computer and a multiple linear regression analysis program. Differences in performance between exp. and control groups were not significant.

480. **BUZBEE**, Betty R. *Two methods of practicing the set-up in volleyball.* M.S. in Physical Education, 1971. 130 p. (J. A. Thorpe)

The Ss were 145 jr. girls in 4 PE classes at Carbondale Community HS. Two classes were assigned to the exp. method, and 2 classes were assigned to the control method. Both methods utilized a rope target, floor target, and restraining lines placed in such positions to encourage performance of a good set-up. The exp. method included an additional visual aid in the form of a hoop. The purpose of the hoop was to provide a goal for accuracy that could be observed throughout the entire execution of the set-up. The hoop was located in a position to encompass the path of a good set-up during flight. Each S practiced by the appropriate method for a total of 60 trials. A skill test for the set-up was given before treatment and again following treatment. Multiple linear regression analyses were utilized to make group comparisons, and a t test was used to determine if a significant amount of skill had been acquired between the pretest and the posttest. Comparisons revealed no differences. Both groups gained a significant amount of skill from the pretest to the posttest. It was concluded that both the exp. method and the control method of practice were effective in terms of acquisition of skill in setting the ball for the spike.

481. DEMARIA, Carol R. *A written program of self-instruction for the tennis serve.* M.S. in Physical Education, 1972. 136 p. (J. L. Thorpe)
Ss were 37 college women enrolled in 2 general studies classes of beginning tennis at SIU. Each class was divided in half with 1 exp. group and 1 control group. The self instructional program was evaluated by comparison of the performance scores of the traditional group with the performance scores of the programmed instruction group on a tennis serve test which measured both accuracy and velocity. The time required to complete each instructional method was equal, being 2 class periods or 100 min. Seventy of the Ss in the exp. group expressed a favorable attitude toward the self-instructional program through written and verbal comments. ANOVA using the linear regression approach was employed in 3 separate analyses to determine the significance of the main effects of methods (traditional and self-instructional) in relation to the dependent variables of accuracy, velocity, and total score, and the results indicated that no difference existed between the performance scores of the group utilizing the traditional method of instruction and the group utilizing the self-instructional method.

482. KORNHAUSER, Samuel B. *The use of a 50 gram glucose solution as an ergogenic aid, pertaining to an anaerobic bout of work.* M.S. in Physical Education, 1972. 83 p. (R. G. Knowlton)
Male Ss (N=18) participated in a 30-min. treadmill run and a stair climbing task designed to measure anaerobic power. Each S was tested on 3 different occasions. Randomly selected treatments were administered on separate days. They were: a 7-oz. solution containing 50 gm. of glucose and a 7-oz. solution containing 27.6 gm. of glucose. On the 3rd day no treatment was given before the anaerobic power test. These solutions were administered at the termination of the 30 min. treadmill run, and 1 and .5 hr. after this, the Ss participated in the anaerobic power test. There was a difference ($p < .05$) found between anaerobic power scores of the treatment using 50 gm. of glucose and no treatment. Higher scores were also found when comparing the solution containing 50 gm. of glucose and that of 27.6 gm. of glucose, but this difference was not found to be significant ($p > .05$).

483. KRALIK, Premysl K. A. *Physiological and personality factors in the maximum two-mile run with untrained subjects.* M.S. in Physical Education, 1972. 89 p. (R. G. Knowlton)
Male untrained Ss (N=20) were tested on 2-mile run. Personality Research Form A and test of VO_2 max were given. The slower runners (N=9) were found to be more impulsive than the faster runners (N=11) ($p < .05$); faster runners invested 94% of their VO_2 max while those slower 85%. The average speed of running individually compared to running in the group was ($p < .01$) only for the group of slower runners. The significant r ($p < .05$) of the faster runners were found between VO_2 max—achievement and play, and between VO_2 max investment—exhibition, play, and social recognition.

484. LONG, Grant H. *Cohesion: A predictor of team success.* M.S. in Education, 1972. 67 p. (P. J. Carroll)
Ss (N=47) from 3 SHS baseball teams, were administered a questionnaire to measure team cohesiveness; and 3 performance tests were administered to measure skills in baseball ability. Hitting ability was obtained from batting averages calculated at the completion of the baseball season. To determine which had the greater contribution to team success (cohesion or skills), linear regression analysis was used to compute S_x^2, F ratio, and probability. Cohesion and skill measures were $p < .01$, however, cohesion had a greater loss of S_x^2 when deleted from the full model than did skills, thus, cohesion has a greater power of prediction of team success than skills. One measure of cohesion, each S's evaluation of the team as a whole, had a greater power of predicting success than the other 2 measures of cohesion concerning: each S's evaluation of every other team member and each S's evaluation of his relationship to the team. The skill measure, throwing for accuracy, had a greater power in predicting team success than skills concerning: throwing for distance, speed (60-yd. dash), and hitting ability.

485. **MILLER**, Cheryl L. *A regression analysis of expressed fatigue by college women during treadmill testing.* M.S. in Education, 1972. 63 p. (R. G. Knowlton)

College women (N=31) were given a treadmill test. Each S was asked to run, at her preferred rate, until exhaustion. Expired air samples were drawn at the S's 1st expression of fatigue and at exhaustion. Immediately after the exercise, Ss indicated total body fatigue by scoring a "fatigue index line." A bicycle ergometer test, resting blood variables, anthropometric measurements, and preferred walking pace were also obtained for each S. A multiple linear regression analysis was employed to investigate the relationships of selected variables to expression of fatigue. The individual's estimation of fatigue is an important aid in determining max VO_2. Perceived total body fatigue is redundant information when physical factors of body structure and exercise variables are used to determine max VO_2. Body wt. and treatmill speed are factors which affected exhaustion levels of the S. A willingness of the individual to exert himself to high levels of fatigue is necessary for the determination of max VO_2. Speed of treadmill more than duration of exercise affected determination of max VO_2.

486. **RANCOURT**, Diane M. *The effect of goal-setting upon a test of physical skill in basketball.* M.S. in Education, 1972. 152 p. (J. A. Thorpe)

The effect of goal-setting on Ss' performances on the Edgren wall-pass test which measures agility and ball-handling skill in basketball was studied. College women (N=66) majoring in PE were assigned to 2 groups, exp. and control. The Ss were tested during 5 wk. of a 10-wk. class. Goals for the exp. group were based upon their obtained scores on the pretest and midtest. The control group did not receive goals other than the completion of a progress chart required by the instructor. Group performances were compared by multiple regression analyses. The exp. group scored higher on the posttest than did the control group. All Ss improved in skill between the pretest and posttest. The posttest scores were reliable estimates of the Ss' performances.

487. **SAMPSON**, Barbara M. *A description and comparison of performances for the straight drive in field hockey.* M.S. in Education, 1972. 125 p. (C. West)

Players (N=8) were selected as Ss—4 from each of 2 groups representing different levels of ability. The actions of the performers, relative to the execution of the drive, were described, compared and related to actions expressed by experts in field hockey as desirable for the execution of the drive. Film analysis was the technique used to investigate the execution of the drive by the Ss. Observations were made of joint and stick actions as well as general actions which occurred during each of 4 swing phases—backswing, precontact, forward swing, and follow through. Independent measures of accuracy and velocity were also obtained for each drive. Actions exhibited by both the proficient and novice players which were compatible with actions described by experts were evident in the head, wrists, and left knee. The proficient players also exhibited compatible actions in the shoulders and elbows. Actions which were not in agreement with those described by experts were evident in the right knee and left foot. Observed stick actions also differed.

488. **SCHRADER**, Suzanne K. *Subjective assessments of velocity and angle of projection of the tennis serve.* M.S. in Education, 1972. 87 p. (J. Thorpe and C. West)

Two methods of measuring velocity and angle of projection for the tennis serve were compared in this study. The exp. method employed subjective evaluations of velocity and angle of projection using numerical rating scales for each factor. The criterion method utilized measurements of time of ball flight, horizontal distance of ball flight, and ht. of ball contact to obtain angle of projection and velocity for each serve. College women (N=35) in 2 beginning tennis classes performed 5 serves each for the exp. Three students, in each class, who were nonexperts in tennis subjectively rated the velocity and angle of projection of each of these serves. Time of ball flight and horizontal distance of ball flight were measured for these serves, also. The ht. of ball contact for each S was determined after the test. The relationship between the 2 methods was determined by the Pearson Product-Moment Method of *r*. The accuracy of the ratings was determined by a 3-way fixed and finite analysis of variance model. Although a marked relationship was found between the 2 methods, there was a difference in the accuracy of the 2 methods for determining velocity and angle of projection.

Springfield College, Springfield, Massachusetts (W. J. Sullivan)

489. **BROCKMEYER**, William. *A comparative study of the differences in grade placement of football programs among selected small, medium and large school districts.* M.S. in Physical Education, 1972. 196 p. (J. Neumann)

Data for this study were obtained from 135 small, 62 medium, and 19 large school districts in the states of Indiana, Michigan, and Ohio. Questionnaires were used. The analysis of the data involved comparisons among the 3 school district population strata concerning various aspects of football programs and their grade placement. It was found that the larger school districts had the largest percentage of schools offering an intramural football program below the 10th grade. There was a great deal of variation in the grade placement of football within the 3 categories of school districts.

490. COUZELIS, Paul Michael. *The relationship of leg strength and body weight to the measurement of maximal oxygen intake on the bicycle ergometer and treadmill.* M.S. in Physical Education, 1972. 55 p. (W. Sinning)

Ss ($N=21$) were males between the ages of 20 and 36 yr. They were all habitually physically active and most were former varsity athletes. All Ss were tested for max O_2 intake on the treadmill and bicycle ergometer as well as for knee extension, plantar flexion, and hip extension strength. Data were treated by *r* techniques. Results of the analysis led to the following conclusions: Max O_2 intake values obtained when the treadmill is used are higher than when the bicycle ergometer is used; none of the strength variables measured in the study are related to max O_2 intake when the bicycle ergometer is used; and body wt. is negatively related to relative max O_2 intake on the bicycle ergometer and treadmill but it is not related to absolute max O_2 intake.

491. DEBOY, James Lawrence. *The effect of aquatics, wrestling, volleyball, and badminton upon the anxiety level of hyperanxious college males.* M.S. in Physical Education, 1972. 45 p. (W. Sullivan)

The Ss ($N=72$) were male students at Springfield College who were classified as high anxious after having taken the IPAT Self-Analysis Form. Ss ($N=26$) participated in an aquatics class, 26 in a wrestling class, and 20 in a combined volleyball-badminton class; participation was for a period of 5 wk. after which the Ss were retested for chronic anxiety level. ANCOVA showed no differences ($p>.05$) in chronic anxiety level among the 3 groups. ANOVA showed that the chronic anxiety level for all 3 groups was reduced ($p<.05$) from the initial to final test.

492. DICKSON, Therese L. *A study of the effects of a program of group creativity in physical education.* M.S. in Physical Education, 1972. 106 p. (J. Parks)

The Ss for this study were 91 Canadian 7th grade girls who ranged in age from 11 to 14 yr. The Ss were pretested on the California Test of personality and on an Interests and Attitudes Questionnaire before beginning a 10-wk. course in group creativity. The program exposed the Ss to different kinds of dance steps and rhythmic movements through resource materials such as films, dance performances, books on dance, and dance lessons. The Wilcoxen Test was used to test for differences between pre- and posttests on both dependent variables. It was found that the Ss improved in personal adjustment and in their interest and attitude toward PE.

493. DROESCHER, Eileen Jo. *A mechanical analysis of the front somersault between the uneven parallel bars.* M.S. in Physical Education, 1972. 49 p. (E. Steitz)

A Springfield College female gymnast was filmed while performing a front somersault between the uneven parallel bars. Six trials were performed and filmed. The camera was a 16-mm Bell and Howell set at 64 frames/sec. A panel of 4 experienced gymnastic judges rated the 6 trials by viewing the film and trial 5 was chosen for analysis since it received the highest rating. A series of findings were presented dealing with the movements of the elbow, shoulder, hip, and knee joints and how these movements and those of the entire body are related to the execution of the move.

494. GARDINER, J. Bruce. *Differences in flexibility between selected springboard divers, gymnasts, and swimmers.* M.S. in Physical Education, 1972. 33 p. (B. Jensen)

The Ss ($N=42$) were male college athletes in the following categories: 15 all-around gymnasts, 12 springboard divers who made the finals in the N.E. Intercollegiate Swimming Championships, and 15 swimmers randomly selected from the Springfield College varsity team. The Leighton Flexometer was used to determine if there were differences in trunk, hip, shoulder, and ankle flexibility among the 3 athletic groups. ANOVA showed differences ($p<.05$) among the 3 groups only on shoulder and hip flexibility. It was found that the divers had greater shoulder flexibility than the gymnasts and the swimmers; there was no difference in shoulder flexibility between the swimmers and gymnasts. The swimmers were found to have less hip flexibility than the gymnasts and divers.

495. HATLEM, Roger Berent. *Professional preparation and experience of the coaches of the Wisconsin Interscholastic Athletic Association.* D.P.E., 1972. 196 p. (R. B. Frost)

Data for this study were obtained from selected head athletic coaches ($N = 1162$) and administrators ($N = 127$) in SHS throughout the state of Wisconsin by questionnaire and personal interview. It was found that Ss favored certification requirements for athletic coaches. Ss agreed on the order of importance of the qualities considered essential for a coach. Ss strongly favored a special professional preparation for coaches. There were great differences between the preparation of head coaches in Wisconsin and that proposed by the Task Force of the AAHPER. Coaches of the major sports were found to have a greater degree of preparation for coaching than were the coaches of the minor sports. A list of recommendations concerning preparation and certification was presented.

496. KNUDSON, Thomas A. *The evolution of men's amateur basketball rules and their effect upon the game.* D.P.E., 1971. 718 p. (E. Steitz)

Data were obtained from official rules guides and books, minutes of various committee and association meetings, reports and studies, published periodicals and professional journals, letters, notes and personal papers of individuals intimately associated with basketball rules development and through the use of questionnaires and personal interviews. It was concluded that the intent of each of the original 13 rules is present in the game today. The National Basketball Committee of the U.S. and Canada and its predecessor, the Joint Rules Committee have played leading roles in the evolution of basketball in the U.S. While the rules have contributed to changes in style of play, most changes have resulted through innovations of coaches and players. Basketball rules development has reflected the attempts of the basketball rules committees to maintain a balance between the offense and the defense.

497. LIBBY, Joan Bouchard. *A cinematographic analysis of the angle of lean rounding buoys in slalom water skiing.* M.S. in Physical Education, 1972. 25 p. (W. Doss)

Male and female competitive water skiers ($N = 10$) were filmed from a position facing them as they rounded the 3rd and 4th buoys of a slalom course. The films were analyzed for the angle of lean of each skier rounding the buoys to the left and to the right. The t test showed ($p < .05$) with a greater angle of lean to the left.

498. LICHTMAN, Brenda. *The effect of topic and source credibility of a dissonant written communication on attitude change.* M.S. in Physical Education, 1972. 140 p. (B. Jensen)

The Ss for this exp. were 343 SHS girls who had initially displayed a negative attitude (score of 75 or below) on the Wear PE Attitude Inventory. Following the pretest, the Ss were exposed to a communication which differed as to topic and source credibility. The 4 topics were physiological-physical, social-mental-emotional, physiological-physical-social-mental-emotional, and Civil War (control). Each topic had a high and low source credibility. After reading the communication the Ss responded to the alternate form of the Wear PE Attitude Inventory. Two persons were used in collecting the data. Two separate ANCOVA were performed. The 1st utilized a 2 × 2 factorial design and it was found that Ss who completed form 001 on the pretest and form 002 on the posttest evidenced ($p < .05$) greater magnitude of attitude change than Ss who completed the forms in the reverse order. The 2nd ANCOVA was done using a 4 × 2 factorial design. It was found that each of the exp. subgroups showed ($p < .05$) greater magnitude of attitude change than did the control group. Also, Ss who received a high source credibility communication showed ($p < .05$) greater magnitude of attitude change than those who read the same passage with a low credibility endorsement.

499. LORD, John C. *An analysis of two-behavioral groups of grade three boys on selected perceptual-motor tasks and self-concept.* D.P.E., 1971. 162 p. (E. Seymour)

The Ss ($N = 70$) were grade 3 boys from selected public schools in Springfield, Massachusetts. Thirty-five boys had been rated by their classroom teachers on the Behavioral Problem Checklist as having emotional and adjustment problems; 35 were rated as not having these problems. These 2 groups were compared for performance on 7 perceptual motor tasks and self-concept. The t test showed the well-adjusted boys to be better ($p < .05$) on visual achievement forms, for both the form and organization subtests. Differences on all other perceptual motor tasks were nonsignificant. The well-adapted boys did better ($p < .05$) than the maladjusted boys on all 7 factors of the Piers-Harris Self Concept Scale.

500. MARCHANT, Kenneth Stanley. *A comparison to determine the faster method of turning from a backward position to a forward position in ice hockey.* M.S. in Physical Education, 1972. 48 p. (J. Genasci)

The Ss ($N = 10$) for this investigation were members of a college varsity ice hockey team. All Ss were tested for speed in executing the cross-over step turn and the pivot turn. The treatments by Ss ANOVA showed the pivot turn to be faster than the cross-over step turn ($p < .01$).

501. **MCMENAMIN, Patrick.** *A comparison of selected high and low academically achieving graduates of Springfield College.* M.S. in Physical Education, 1972. 68 p. (J. Neumann)

Data were obtained from questionnaires sent to the top and bottom 15% male PE majors, as measured by their GPAs at the end of their sr. year, and who graduated from Springfield College in the years 1955, 1958, 1960, 1962, and 1964. One hundred of the 126 questionnaires were returned. Analysis was by X^2 and t and led the investigator to conclude that both high and low achievers were pursuing fields for which they were prepared as well as in the pursuit of advanced standing. There appeared to be little difference in whether a student graduated in the upper or lower 15% of his class relative to the information obtained from the questionnaire.

502. **NARDONE, Leonard J.** *A comparison in the accuracy of the jump shot, hook shot and jump-hook shot at various distances from the basket.* M.S. in Physical Education, 1972. 41 p. (E. Bilik)

The Ss ($N = 12$) were inexperienced jr. and sr. SHS boys who were tested for basketball shooting accuracy using the jump shot, hook shot, and jump-hook shot from 3 distances (4, 8, and 12 ft.), and from 3 positions (left, center, and right). ANOVA and Duncan's Multiple Range Test showed that the jump shot was ($p < .05$) more accurate than the jump-hook shot at all 3 distances. There were no differences ($p > .05$) between the jump shot and the hook shot at any of the 3 distances. The hook shot was ($p < .05$) more accurate than the jump-hook shot at the 8- and 12-ft. distances but not at the 4-ft. distance.

503. **NOBLE, Mary Louise.** *For the love of movement through creative dance in physical education.* M.S. in Physical Education, 1972. 52 p. (M. Thorsen)

This study determined if nondancers could progress from a basic introduction in technique into a course for control, understanding, and depth of feeling by meeting a predetermined list of criteria. The 9 students involved were PE majors at Springfield College and were nondancers. They practiced for a period of 14 wk. before performing the dance. Three evaluators were chosen on the basis of experience and knowledge in dance. It was concluded that the performance fulfilled the outline of the choreography, demonstrated the theme of the piece, and satisfied the items listed in the evaluative criteria. Videotapes of the performance were included as part of the thesis.

504. **RAYFIELD, Michael Wayne.** *The effect of field position on side arm shooting accuracy in Lacrosse.* M.S. in Physical Education, 1972. 36 p. (W. Sullivan)

The Ss ($N = 16$) were SHS varsity Lacrosse players who were tested for shooting accuracy from the left, center, and right positions at 10 and 15 yd. in front of the goal. All Ss were righthanded shooters and they used the sidearm shot. The Wilcoxen Test was used to test for differences among the 3 positions separately for each of the 2 distances. It was found that the Ss had greatest shooting accuracy from the left side and greater shooting accuracy from the center than from the right side.

505. **ROACH, David Thomas.** *Comparison of the butterfly open and flip turns for competitive swimming.* M.S. in Physical Education, 1972. 22 p. (B. Jensen)

The Ss were 6 swimmers from the Springfield College varsity swimming team. Each S was an experienced butterfly stroke swimmer and was taught both methods of turning by the investigator; the Ss were required to practice each turn 5 min. a day for a 4 wk. period. Following the practice period each S was tested for turning speed using each method of turning. Turning speed was computed by filming the testing sessions with a Bolex 16-mm movie camera. Each S swam a total of 8 turns for speed, 4 times for each of the 2 methods. The t test for correlated groups was found to be nonsignificant ($p > .05$). It was concluded that neither the open turn method nor the flip method was faster than the other while swimming the butterfly stroke.

506. **SMITH, Elizabeth Reid.** *A documentary study of the uneven parallel bars for women.* M.S. in Physical Education, 1972. 39 p. (J. Genasci)

The data were collected from personal interviews, reports, and rule books of the Federation of International Gymnastics, and the minutes of the Women's Technical Committee. It was found that the uneven parallel bars have been included in international competition from the 1st organized women's competition in the 1936 Olympics. The uneven parallel bars have changed slightly in width and ht. of the lower bar since their 1st appearance in 1936. The compulsory routines of the uneven parallel bars have incorporated more swinging movements and fewer strength movements since their 1st appearance.

507 SMITH, Ronald. *Academic achievement of interscholastic wrestlers and non-athletes.* M.S. in Physical Education, 1972. 42 p. (E. Bilik)

The Ss were 60 SHS wrestlers and 60 SHS nonathletes from selected schools in Massachusetts and Pennsylvania. The academic records of the schools were gleaned in order to determine the GPA of the Ss during the season of competition and out of season. The *t* test found no difference ($p > .05$) between the M GPAs of the wrestlers and the nonathletes either in season or out of season. There was a difference ($p < .01$) between the M GPA of the wrestlers in season and the M GPA of the wrestlers out of season with the M GPA in season being higher. There was no difference ($p > .05$) between the overall M GPAs of the wrestlers and nonathletes.

508 STAM, Neil J. *The relationship of errors to runs scored in high school baseball.* M.S. in Physical Education, 1972. 30 p. (W. Sullivan)

Data for this study were obtained from the baseball scorebooks of a SHS baseball team for the years 1965-1970 inclusive. During this time period 107 games were played. Percentage analysis, X^2, and the contingency coefficient were used to conclude that there was a relationship ($p < .05$), although low to moderate, between winning and the number of errors committed; as the number of errors decreases, the chances of winning increases. More runs scored through the commission of errors than were scored by any other means.

509 WILENSKY, Neil. *Temperamental differences between male intercollegiate varsity wrestlers and basketball players.* M.S. in Physical Education, 1972. 39 p. (I. Genasci)

The Ss for this study were male intercollegiate varsity basketball players (N=24) and varsity wrestlers (N=26). The Thurstone Temperament Schedule, which measures 7 traits, was administered to all Ss and the differences were tested for significance at the .05 level by use of the normal curve statistic *z*. No personality differences were found between the basketball players and the wrestlers.

Stanford University, Stanford, California (J. E. Nixon)

510 PITTMAN, Anne M. *Recreation activities instrumental to expressed life goals of San Carlos teen-age Apaches.* Ed.D. in Education, 1972. 302 p. (J. E. Nixon)

An unstructured taped interview consisting of free response to a series of line drawn pictures of 17 selected REC activities was used to elicit responses from 43 teen-age San Carlos Apache Indians. The technique is an appropriate modification of the Instrumental Activities Inventory developed by Drs. George and Louise Spindler. Seven life-goal categories and 3 residual categories were established from the manifest reasons given for the selection of the activities. The findings were analyzed using rank-order statistical methods and Kendall's tau coefficient. The rank order of life-goals and residual categories by frequency and percentage of the total frequency were determined. The life-goal categories in order of rank are: social status, healthful skills, education, masculinity-femininity, recognition, identity, and utilitarian. The residual categories in order of rank are: negative, ambivalent, and social disapproval.

511 REESE, Richard D. *Physiological responses to static and phasic exercise in the supine position.* Ph.D. in Education and Physiology, 1972. 252 p. (W. K. Ruff)

Additional basic data are needed to improve the basis for prescription of preventive and remedial physical exercise. VO_2 (Webb MRM), BP (auscultation), HR (EKG), Tre (Digitek), blood pH (astrup), and blood lactates (sigma) were measured on 6 men and 6 women who performed 8 exercise routines composed of static and phasic leg exercise (supine position) for 30 min. in the continuous and intermittent mode at 15%, 30%, and 60% of their max capacity. A comparison of measurements averaged over the work period, during static and phasic exercise, respectively, with combined data from all Ss gave consistent results ($p < .05$, ANOVA): VO_2 0.6 versus 0.8 L/min, HR 99 versus 99 bpm, BPs/BPd 144/97 versus 140/93 mm Hg, Tre 37.01° versus 37.04° C, postexercise pH 7.28 versus 7.28 and lactate was 19.3 versus 19.2 mg/100 ml. These results suggest that comparable data can be obtained utilizing percentage of max VO_2 with phasic exercise and the same percentage of max force with static exercise. However, there was a sufficient range within each of the physiological variables throughout the 8 routines (e.g., VO_2 0.4 to 1.4 L/min, HR 74 to 128 bpm, BP 118/81 to 170/118, and lactate 10.1 to 34.9 mg/100 ml) to permit wide latitude in the selection of exercise routines to fit within predetermined requirements.

Temple University, Philadelphia, Pennsylvania (B. D. Franks)

512 AJISAFE, Michael O. *The physical, psychological and sociological concepts of human movement and their validity and relevancy for inclusion in the Nigerian schools physical education curriculum.* Ed.D. in Physical Education, 1972. 134 p. (T. W. Evaul)

From the literature, 925 physical, 446 psychological, and 384 sociological concepts were identified. The identified concepts were synthesized into 237 conceptual statements. The synthesized concepts were then submitted to 3 panels of subject experts (jurors) for their expertise in 3 areas of human movement. The 3 sets of jurors validated 118 physical, 59 psychological, and 27 sociological concepts. The validated concepts were then submitted to a panel of curriculum experts (jurors) from Nigeria and another from the U.S. for evaluation as to their relevancy for inclusion in the curriculum. Ninety-three concepts were commonly declared as highly relevant and relevant by both the Nigerian and U.S. jurors. Data indicated that the Nigerian and U.S. jurors did not differ in what they considered relevant concepts.

513 BURKE, Edmund J. *A factor analytic investigation into the validity of selected field tests of physical working capacity.* Ph.D. in Physical Education, 1973. 66 p. (R. A. Berger)
This study determined the validity of selected field tests of physical working capacity. Male college students (N = 44) (ages 17-30) were administered a series of 10 lab. and 7 field tests of physical working capacity. Twenty two variables including 14 lab. test variables, 7 field test variables, and body wt. were intercorrelated using the Pearson Product Moment Correlation Method and then factor analyzed. Four factors were found, accounting for 77% of the total common factor variance. Each factor was named in accordance with the primary element to which its variables were related as follows: factor 1, aerobic working capacity, including high loadings from measured VO_2 max (ml/kg/min) and (ml/kg LBM/min), the Balke Test of Aerobic Capacity, the 300-yd., 600-yd., 1-mile, and 12-min. runs; factor 2, anaerobic working capacity, including high loadings from the Margaria Test of Anaerobic Power, the Sum 50's test, the 10-yd., 50-yd., and 300-yd. runs; factor 3, body wt., including high loadings from body wt. and variables utilizing absolute measures of VO_2 (expressed in L/min); factor 4, HR response to exercise, including all variables utilizing HR as the criterion measure. It was concluded: the 600-yd., 1-mile, and 12-min. runs are valid measures of aerobic working capacity; and the sum 50's test, the 10-yd., 50-yd., and 300-yd. runs are valid measures of anaerobic working capacity.

514 CHEFFERS, John T. F. *The validation of an instrument expanding the Flanders Interaction Analysis System, designed to describe nonverbal interaction, a more versatile teaching behavior, and increased pupil response.* Ed.D. in Physical Education, 1972. 169 p. (T. W. Evaul)
To determine the validity, reliability of CAFIAS, an adaptation of Flanders IA System (FIAS) for use in physical activity classes. The performance of CAFIAS was measured against the performance of FIAS through comparison of trained observers answering a common questionnaire (Physical Activity Questionnaire—PAQ) from blind matrix interpretation. Both were compared with a control group using live interpretation. TV tapes, 6 × 20 min. of diversified activity classes were used. Ss (N = 27) interpreted PAQ, while 6 Ss built the original matrices. Two factor ANOVA found differences showing control > CAFIAS > FIAS. Reliability was established at the .05 level through Kendalls W of Concordance. All Ss using blind matrix interpretation those using live interpretation. Verbal input was found necessary for lesson interpretation and no advantages appeared from team coding against individual coding.

University of Oregon, Eugene, Oregon (F. H. Jenne)

515 GREENBERG, Franklyn R. *Achievement gains in a first aid course taught by individualized and conventional group methods.* Ed.D. in Health Education, 1972. 213 p. (F. H. Jenne)
After a pilot study was conducted in which first aid curriculum materials and a knowledge test were developed, the knowledge test was administered to 311 male JHS Ss who were assigned to 1 of 12 groups. Four exp. groups received individualized instruction, 4 exp. groups received conventional instruction, and 4 control groups received instruction in a different course of study. The exp. was replicated 4 times and was concerned with the differential effects of the traditional, same rate of progress and oral presentation for all Ss, and the individualized, different progress rates and personal feedback for each S. Differences favoring conventional instruction ($p < .05$) occurred between the individualized and conventional groups in 3 of 4 replications. There were no differences in knowledge gain between high ability Ss receiving individualized and conventional instruction in any of the 4 replications, while differences did occur between low ability Ss receiving both types of instruction in 2 of 4 replications, which favored the conventional method. Adjusted residual gain score group Ms for every replication were higher under the conventional method of instruction than under the individualized method.

516 GREENBERG, Gail L. *Prediction of level of aggression of college football athletes from the motivational analysis test.* Ed.M. in Physical Education, 1972. 36 p. (R. A. Berger)
Temple Univ. varsity football athletes (N = 35) were examined to determine whether level of aggression of college football athletes could be predicted from the Motivational Analysis Test. Five football coaches

were asked to rate each player on an aggression scale. The step-wise multiple *r* revealed that there were motivational factors related to level of aggression among football athletes. These factors were unintegrated career sentiment and integrated home-parental sentiment. Although certain underlying motivational factors were related to level of aggression, the level of aggression was not able to be accurately predicted in another sample.

Temple University, Philadelphia, Pennsylvania (B. D. Franks)

517. **HENDERSON, David J.** *Aerobic capacity and adrenocortical response to work and cold water stressors.* Ph.D. in Physical Education, 1973. 67 p. (R. A. Berger)

Healthy males, 17-36 yr., (N = 2[illegible]) were measured for max VO_2 and percentage body fat. Ss were exposed to separate stressors of submax work (treadmill run at 4% grade, 7 mph, for 9 min.) and cold water (immersion to the shoulders, 5 min., 9° C ± 2°). Blood samples later analyzed for cortisol were drawn prior to and 0, 30, 60, and 120 min. after stressor exposure. Plasma cortisol data were analyzed by a MANOVA statistic appropriate to a 2 × 2 × 4 design (aerobic capacity × stressors × time of sampling). No differences ($p > .20$) were found in terms of body fat and age between higher and lower max VO_2 groups, with Ms of 60.9 and 49.7 ml/kg/min, respectively. Using criterion of cortisol change from basal, differences were found between max VO_2 groups ($p < .015$) and time overall ($p < .001$). Max VO_2 and time interaction was also significant ($p < .02$).

518. **HUGHES, Sarah K.** *Sixty years of school nursing in Reading, Pennsylvania.* M.Ed. in Health Education, 1972. 100 p. (F. H. Jenne)

Functions of school nurses are described and analyzed from 1911 to 1971. A questionnaire eliciting the extent to which selected functions were and are performed was administered to all present and retired school nurses in the district. Documents reviewed included Board of Education Minutes, an unpublished original history by a retired nurse, state guides and manuals, Purdon's Pennsylvania Statutes Annotated, city and school newspapers, and school health department annual reports.

519. **MITCHELL, Wilton W.** *A comparative study of effectiveness of programmed instruction in teaching health to low and high achieving junior high school students.* M.Ed. in Health and Physical Education, 1972. 21 p. (M. Goldberger)

Two groups of JHS students (N=62) with similar IQ scores but different achievement scores ($p < .05$) were compared on a standardized health knowledge test before and after 6 wk. of "programmed instruction." It was found that the high achieving group did better on the pretest than did the low achieving group ($p < .05$). Analyses revealed no difference in the M achievement scores on the health knowledge test following the treatment.

520. **PAOLONE, Albert M.** *The effects of training at different ambient temperatures on maximum aerobic capacity.* Ed.D. in Physical Education, 1972. 119 p. (B. D. Franks)

Two groups (N=5) of untrained, college age male volunteers underwent 36 sessions of endurance training in the form of progressively increasing workloads on variable load bicycle ergometers. A 3rd group (N=4) served as controls. One of the treatment groups performed the workbouts in a controlled environment of 33.3° C, 50% RH, and the other at 22.2° C, 50% RH. Max VO_2, HR response to submax work, and VO_2 for submax work were assessed in all 3 groups prior to the exp. period, after 14 training sessions, and after the exp. period. All O_2 consumption values were reported in L/min and ml/kg/min. ANCOVA of test 2 and test 3 scores yielded *F* ratios ($p < .10$) for HR response to submax work at T2 and T3 and max VO_2 in ml/kg/min at T3. Posthoc comparisons ($p < .10$) among adjusted Ms indicated no difference between treatment groups.

521. **RAU, Malvina T.** *Reward, punishment, and performance of a gross motor skill.* Ph.D. in Physical Education, 1972. 74 p. (H. K. Jack)

Eight and 11-year-old girls (N=150) were assigned to 5 groups: verbal reward (VR), tangible reward (TR), verbal punishment (VP), tangible punishment (TP), and no reinforcement (NR). Ss kicked playground balls 50 times at a target divided into 9 sections. Kicks were scored according to distance from the center target section. Under the TR conditions, Ss were dispensed negotiable tokens for improvement in performance and for striking the center target section. Under the TP condition, Ss lost tokens for deterioration in performance. Words used under VR and VP conditions were intended to be indicative of praise or of reproof and were dispensed under the same contingencies as were tokens. Treatment group menas of total scores per trial block were compared by 2 × 2 × 2 × 5 ANOVA. Only the main effect for trial blocks and the type of reinforcement × type of reinforcer × trial blocks interaction were significant.

A posteriori probing of the 3-factor interaction yielded the following results: the Ms of the VP and TR groups were greater than those of the VR group at blocks 3 and 4; the M of the VP group was greater than that of the TP group at block 3. Comparison of Ms of exp. and control groups at each age level yielded no differences.

522. **ROBERTS, Dan W.** *Comparison of various levels of ability and practice conditions when shooting basketballs from three different distances with and without the use of the backboard.* M.S. in Physical Education, 1972. 59 p. (B. D. Franks)

Ss (N = 36) were male volunteers from Temple University. Each S engaged in a practice session 5 times per week for 4 wk. Experience was the criteria used by the author to place the Ss in a specific category. Every S attempted 15 shots from each of 3 designated distances. A total of 45 shots a day were recorded for each S. Pre- and posttests were given to each individual involved in the study. The tests consisted of 10 attempts from each of the 3 distances under both backboard and no backboard conditions. Sixty shots were attempted during the test. A 4-way ANOVA was used. The following factors were found to be significant: level of experience; distance the shot was taken; and the interaction between the distance the shot was taken and whether or not the backboard was used. After 20 practice sessions, the following factors were found to be significant on the final analysis: interaction between level of experience and distance the shot was taken, and testing with and without the use of the backboard.

523. **RODGERS, Ken L.** *Motor-unit involvement and tension during maximum, voluntary concentric, eccentric, and isometric contractions of the elbow flexors.* Ph.D. in Physical Education, 1973. 84 p. (R. A. Berger)

Twelve male Ss performed submax and max contractions of the elbow flexors concentrically, isometrically, and eccentrically utilizing a Cybex dynamometer. A constant angular velocity was maintained independent of the force produced by S. The average torque and average value of the integrated EMG were determined during the range of elbow movement between 80° and 125° and at 102° for isometric contractions. The average torque produced during max eccentric contractions was almost twice that of concentric. However, the degree of motor-unit involvement was not different between the 2 types of max contractions. The force-velocity relationship approximated an inverted S-shape curve with the isometric force falling between the eccentric and concentric. Concentric force decreased only 17.4% as the velocity increased from 1.5 rpm to 24 rpm.

524. **SADOWSKAS, Beatrice K.** *A study to determine the degree of importance given to the school nurse's role in mental health by other school personnel.* M.Ed. in Health Education, 1972. 114 p. (F. H. Jenne)

Data were gathered from school personnel Q sort cards and by means of a related questionnaire. The instruments were designed to assess the relative importance assigned to several different nursing functions, including both mental and physical health functions, by the various groups. All groups, including the school nurses, were found to view the nurse's role as being primarily concerned with physical health. Teachers and guidance personnel ranked the mental health items in second place—higher than did the nurses themselves. HE and community relations functions were ranked lower in importance by all groups than those nursing functions relating either to physical or mental health.

525. **SHERMAN, Steven A.** *Survey of reasons for students' extent of participation in a university recreation program.* M.Ed. in Physical Education, 1972. 74 p. (I. Shapiro)

A survey was administered to (N = 3858) students in a basic instruction program in PE at Temple Univ. Findings were as follows: fitness and fun are major reasons for participation, students believed REC was an appropriate college activity, there are activity preference differences between males and females, students desired a block of time for REC, there are factors pertinent to each category of participation and there were more nonparticipants than irregular or regular participants.

526. **SHOCKLEY, Glenn A.** *Effects of incentives presented by an audience on the learning of a complex motor skill.* M.Ed. in Physical Education, 1972. 68 p. (B. D. Franks)

A pursuit rotor task was employed to determine the effects of various audience incentives on the learning of a complex motor skill. The 75 Ss were equally divided into the following groups: positive audience incentives; negative audience incentives; combined positive and negative audience incentives; nonevaluative audience comments; and control group or no audience members present. Each S was tested for 21 trials consisting of 18 trials experimental treatment, and 3 trials for a posttest with no audience members present. Little difference was noted in learning as a result of the various audience incentives.

527. STOCKER, Janice M. *Motor performance and state anxiety at selected stages of the menstrual cycle.* Ed.D. in Physical Education, 1972. 126 p. (B. D. Franks)

Undergraduate women (N=20) PE majors were tested for their levels of anxiety, as measured by the STAI A-State scale, blood pressure, and HR, and for their scores on both a fine and a gross motor task on each of 6 days during 1 menstrual cycle. Five of the 6 days were chosen to represent specific stages in the menstrual cycle: destructive, follicular, ovulatory, luteal, and premenses, and the remaining test day was used to determine test-retest consecutive day reliability coefficients. ANOVA was used and although there were no cyclic variations in the measures of anxiety and motor performance, there was a monthly rhythm with certain definite trends: anxiety, both psychological and physiological, was lowest during the intermenstrual period and highest during the destructive stage, and performance on fine and gross motor performance tasks was most efficient during the intermenstrual period and least efficient during the premenses and destructive stages.

528. VANDERPOOL, Kenneth G. *The attitude of selected nineteenth century Disciples of Christ leaders regarding physical activity.* Ed.D., 1972. 178 p. (H. K. Jack)

Data were taken from the writings of selected 19th century Disciples of Christ leaders to determine their attitude regarding physical activity for man and to reveal their concept of the body relative to its spiritual significance. It was concluded that the Disciples of Christ leaders selected for this study believed that: good health is important and physical activity contributes to good health; physical activity is absolutely mandatory for complete and optimum development of the individual; REC in the form of physical activity is acceptable for Christians, but REC that is religious or utilitarian in nature is more desirable; work is necessary for survival and happiness, and all occupations are to be held in honor if they are honest and useful; the body is the Temple of the Holy Spirit.

529. ZAMBRANO, Geraldine. *A comparison between women physical education majors and women non-majors on the basis of selected motivational factors.* Ed.M., 1972. 46 p. (R. A. Berger)

Texas A&M University, College Station, Texas (L. J. Dowell)

530. COUEY, Richard B. *The effect of training at various heart rate intensities on cardiorespiratory fitness.* Ph.D. in Physical Education, 1972. 175 p. (L. J. Dowell)

Ss (N=50) were divided into 5 equal groups. Four exp. groups trained on a motor driven treadmill at 60, 70, 80, or 90% intensity levels for a distance of 1 mile, 4 days a week, for 6 wk. Max VO_2, max HR, resting HR, and workload changes were examined by a 5 × 2 ANOVA comparing gains from pretest to posttest. The 90% level was found to be better than the other levels studied in reducing resting HR. Workload changes occurred at the 70, 80, and 90% intensity levels with the 80 and 90% levels better than the 70% level in increasing the capacity to do work. The threshold level for effecting change was found to be the 70% level with the optimum level of intensity for effecting greatest gains was found to occur at the 80% level of intensity.

531. BURTON, John R. *The effect of various feedback conditions on muscular development.* Ph.D. in Physical Education, 1972. 113 p. (C. W. Landiss)

Ss (N=108) were pretested by isotonic and isometric tests, ranked by a total strength index, and divided into 4 groups which received below actual performance feedback, above actual performance feedback, actual performance feedback, and no feedback, respectively. Each of the 4 groups were divided into 2 subgroups, one which trained isotonically, and the other which trained isometrically for a period of 7 wk. A 3 factor (method of training, initial strength, and feedback condition) factorial ANOVA and Duncan's Multiple Range Test were used to analyze data. Isotonic training yielded greater strength gains per max. contraction than did isometric training. Ss experienced greater strength gains when knowledge of results were available, with greater gains observed when Ss received true feedback or feedback above actual performance.

532. DONAHO, Patsy M. *A comparison of the effectiveness of three unit organizational schemes in teaching girls' basketball.* M.S. in Physical Education, 1972. 79 p. (J. M. Chevrette)

SHS girls (N=193) were taught girls basketball using 3 different unit organizations: "competition," "readiness," "logical." Ss were administered pre- and posttests in the jump and reach, agility, speed pass, overarm throw for accuracy, 12-ft. shooting, lay-up, dribble, and knowledge test. Organizations were compared using ANCOVA and the Scheffe test ($p<.05$). The "readiness" and "logical" unit organizations were found to be more effective organizations for teaching basketball skills to SHS girls than the "competition" unit organization. The "readiness" organization was more effective for teaching basketball knowledge than was the "competition" organization.

533. GRAVES, James M. *The effects of a boys' club program on the self-concept and selected physical attributes of 12 and 13 year olds.* Ph.D. in Physical Education, 1972. 232 p. (L. J. Dowell)
The TSCS and 3 physical tests (50-yd. dash, pull-ups, and baseball throw for accuracy) were administered to boys (N = 277) 7-mo. apart. Ss were divided into 4 groups, Bryan Boys Club, advantaged and disadvantaged (BBC-A, BBC-D), and Non-Boys Club, advantaged and disadvantaged (NBC-A, NBC-D), ($p < .05$). The total group's significant r's were between total personality, physical self, social self, and speed, and between physical self and strength. Significant r's for NBC-D were between physical self and speed. NBC-A r's were speed, strength, and total personality, physical, personal and social self. ANOVA found gains for NBC-D in speed, and NBC-A, in moral-ethical and in personal self. The advantaged scored higher in family self than disadvantaged. NBC-A was found to be superior to NBC-D in speed.

534. GREEN, Donald E. *Effects of knowledge of opponents' past performance on performance of a motor task and its interaction with need achievement.* Ph.D. in Physical Education, 1972. 97 p. (J. M. Chevrette)
Ss (N = 200) male students were given the EPPS. Ss scoring above the M on the achievement variable were classified as possessing a high need for achievement and Ss scoring below the M were classified as possessing a low need for achievement. Ss performed 2 1-min. all out sprints on a bicycle ergometer against a 3-kilopond resistance. One sprint was performed alone and another in competition with a sham competitor under knowledge conditions of 25% superior, 10% superior, 10% inferior, 25% inferior, and no knowledge about opponent. Performance scores were the number of revolutions pedaled. ANCOVA 2 × 5 factorial design found no difference between treatments or need for achievement with no interaction.

535. GRIMLAND, Andrew C. *The effects of selected teaching styles on learning an individual sport.* Ph.D. in Physical Education, 1972. 159 p. (L. J. Dowell)
Ss were chosen from 3 PE tennis classes that met 3 times a week for a period of 9 wk. A control group was chosen with characteristics testing equivalent to the pretest scores of exp. groups. Classes were taught by the competition, logical, and readiness style, respectively. The 3 exp. groups and the control group were given pre, post, and retention (12 wk. later) tests on tennis skills, tennis knowledge, and attitudes toward physical activity, in addition to pre and post motor ability tests for all groups. The t, ANOVA, and Duncan's New Multiple Range Tests were used to determine differences between groups ($p < .05$). General motor ability increased following the logical and competition styles, while acquired tennis skill is least retained 12 wk. after instruction using the competition style. There was no difference in retention of tennis knowledge using any of the 3 organizational styles and the 3 styles had little effect on general attitude of college males toward physical activity. The logical style results in less postparticipation in tennis and failed to produce an increase of confidence in tennis skill after completion of the course.

536. JUBELA, Robert O., Jr. *The attitudes of selected high school students toward physical education: Implications for curriculum development.* M.S. in Physical Education, 1972. 91 p. (J. M. Chevrette)
Students at 2 Texas SHS (N = 387) were administered an attitude toward PE inventory containing 5 categories (Intellectual Development, Skill Development, Physical Development, Emotional Development, and Social Development). The 5-point Likert-type scale was used. Ss were divided into 4 groups (rural males, rural females, urban males, and urban females). ANOVA for factorial design ($p < .01$) indicated a difference between rural and urban students in each of the 5 subgroups of the inventory. The effect of location of females' and sex was significant in the physical development and social development category. X_2 showed that 18 of 30 statements varied from expected values, with the major portion of the 18 statements in the intellectual development and in the social development areas.

537. TERRY, James W. *The development of a regression equation to predict workload for the Astrand-Rhyming test.* Ph.D. in Physical Education, 1972. 113 p. (C. W. Landiss)
Ss were 60 male college fresh. assigned to 2 equal groups (exp. and validation) based on scores obtained from the Balke Treadmill test of aerobic capacity. Age, ht., wt., resting HR, resting blood pressure, 1-min. exercise HR, leg length standing and on the bicycle ergometer scores were collected for the exp. group. Data for workload was obtained from Ss riding the bicycle ergometer on successive days, starting at 600 kpm and increasing 150 kpm each day until a HR near 165 beats was elicited. A multiple regression equation was developed to predict workload using a stepwise regression analysis. The validation group was administered the Astrand-Rhyming test using the established multiple regression equation. A predictive

validity coefficient and an error in estimation were calculated. It was found that the multiple regression equation, $\text{workload} = 1123.452 + \text{age}(1.746) + \text{weight}(2.201) + \text{minute HR}(-7.386)$ will accurately predict workload and that the Astrand-Rhyming nomogram made a large underestimation of aerobic capacity for Ss in this study.

538 SHOWS, David A. *The effect of intensity and duration of exercise bouts upon the electrophysical components of the cardiac cycle.* Ph.D. in Physical Education, 1972. 134 p. (C. W. Landiss)
College students ($N = 50$) were assigned to 4 exercise groups and a control group. The exercise groups trained on a bicycle ergometer 3 days a week for a period of 6 wk. Groups were assigned 1 of the 4 exercise programs; 25% intensity for 10 min., 75% intensity for 10 min., 25% intensity for 30 min. or 75% intensity for 30 min. with workload and HR continuously monitored. Cardiac interval components (arterial pulse, phonocardiogram, and blood pressure during a condition of rest, while working, and 1.5 min. after exercise) were evaluated prior to and after the conditioning program. ANOVA, Newman-Keuls Multiple Comparison Technique, *t* and product-moment *rs* were used ($p < .05$). Resting values of the cardiac cycle components were not influenced by the exercise programs but are changed when measured during recovery. The degree of change in the interval time for the cardiac cycle component is a function of the total energy expended while the systolic blood pressure and systole time interval was found to be related both initially and following the exercise program when measured at rest.

539 WORSHAM, Raymond L. *The effects of training frequencies upon selected physical fitness measures in college men.* Ph.D. in Physical Education, 1972. 117 p. (C. W. Landiss)
Ss ($N = 42$) were assigned to a control and 2 exp. groups. Exp. group 1 exercised 4 days a week, 10 min./day at a 75% HR intensity for a period of 6 wk. on a bicycle ergometer while exp. group 2 exercised 2 days a week for 20 min./day at 75% HR intensity for 6 wk. on a bicycle ergometer. All groups were given pre, post, and retention tests in the cardiovascular measures; submax. exercise PR, % lean body mass, max. O_2 intake Ml/kg lean body mass, submax. minute volume ventilated/kg body wt., resting diastolic blood pressure, resting pulse pressure and PFI. ANCOVA, and *t* were used ($p < .05$). Exercising at 75% intensity for 6 wk. under any of the exp. conditions studied resulted in cardiovascular fitness gains but no differences were found in any of the measures studied between the 2 exp. groups. Acquired gains in cardiovascular fitness following a 6-wk. exercise program are equally retained irrespective of the training programs studied.

Texas Tech University, Lubbock, Texas (E. Burkhardt)

540. BUNDY, William B. *A comparison of four strength maintenance programs for the in-season football program.* M.Ed. in Physical Education, 1971. 56 p. (R. W. Kireilis)

541. DEBORD, Ray. *Discriminating factors of head football coaches in Texas high schools.* M.Ed. in Physical Education, 1971. 59 p. (R. W. Kireilis)

542. DEXTER, Warin H. *Critical requirement of intramural directors.* M.Ed. in Physical Education, 1971. 75 p. (J. E. Burkhardt)

543. JOHNSON, Robert W. *The effect of peer performance feedback upon learning a simple motor skill.* M.Ed. in Physical Education, 1971. 48 p. (B. Kozar)

544. PIPPIN, Grover D. *A comparison of four methods of measuring forearm flexion strength.* M.Ed. in Physical Education, 1971. 60 p. (A. E. Coleman)

545. WILLIAMS, Lanny R. *The effect of three selected training programs on speed, leg strength, and leg power.* M.Ed. in Physical Education, 1971. 66 p. (J. E. Burkhardt)

546. FORD, Don Ray. *A comparison of massed and distributed practice on free throw practices.* M.Ed. in Physical Education, 1972. 47 p. (J. E. Burkhardt)

547. MAY, Larry Don. *A study of the measurement of potential football ability in high school players.* M.Ed. in Physical Education, 1972. 90 p. (J. E. Burkhardt)

548. MARSH, Jesse. *A study of predictability of ability in handball.* M.Ed. in Physical Education, 1972. 34 p. (R. W. Kireilis)

549. REEVE, Thomas Gilmour. *The effects of training with hand-paddles on swimming performance.* M.Ed. in Physical Education, 1972. 66 p. (J. E. Burkhardt)

550. SHOTWELL, Frank Leroy. *The relationship of swimming speed to selected physical measurements.* M.Ed. in Physical Education, 1972. 111 p. (J. E. Burkhardt)

551. WILLIAMS, James L. *A comparison of the relationships between physical fitness, mental ability and socioeconomic level.* M.Ed. in Physical Education, 1972. 55 p. (J. E. Burkhardt)

The University of Texas at Austin, Austin, Texas (L. W. McCraw)

552. FOSTER, Carl Clinton, Jr. *Maximal aerobic power and the aerobic requirements of running in trained runners and trained non-runners.* M.Ed. in Physical Education, 1972. 63 p. (J. Daniels)

Nine collegiate swimmers and 9 middle distance runners participated in treadmill running in a discontinuous series of 6-min. runs of 170, 200, 230, and 250 m/min and in continuous run max test at 250 m/min with increments in grades until exhaustion. Swimmers had greater aerobic requirements of running with both the VO_2 at 180 m/min and the slope of regression VO_2 on speed greater. The runners were more homogeneous, and for them the max aerobic power and the aerobic requirements of running were found to be poor predictors of running performance. There was a negative *r* between max VO_2 ml/kg and speed of best competitive performance.

553. HAGERMAN, Betty Sue. *Effects of age and success on arousal levels of advanced female tennis competitors before and after tournament competition.* M.Ed. in Physical Education, 1972. 120 p. (W. Wyrick)

Total body RT (measures of arousal) were obtained during rest and before and after a tournament match on 49 advanced female tennis players, ages 9 through 18. Ss completed a total of 160 trials with 40 trials each on day 1 and 2 at rest, 40 before match and 40 after on day 3. A descriptive analysis, ANOVA, and intraclass *r*s revealed high levels of arousal after tournament match in 1st block with levels decreasing dramatically in blocks 14, 15, and 16. RT Ms were faster with increasing age groups, but experience groups were not different. Neither success/failure nor match length seemed to affect the levels of arousal prior to and after tournament match competition.

554. McMIKEN, Donald Fraser. *Oxygen deficit-oxygen repayment relationships of men in treadmill running.* Ph.D. in Physical Education, 1972. 117 p. (J. Daniels)

VO_2 and rectal temp. were measured in 30 male college students at baseline (walking at 60 m/min) during treadmill running for randomly assigned durations (.5-20 min.), and for a 30-min. recovery period at baseline work. O_2 repayment after steady-state running at constant speed (140 m/min) was compared with values obtained after short runs prior to steady state. Results revealed no difference in O_2 repayment for steady-state and non-steady-state work, O_2 repayment was independent of work duration when workload and intensity were controlled, O_2-deficit was not a predictor of O_2-repayment, workload and intensity accounted for 80% of variance in O_2 repayment with work intensity accounting for greater part (69%).

555. PEARCEY, Harold Wilson. *Correlates of leg power (as measured by jump and reach and Dekan timer tests), leg strength, leg speed, and certain anthropometric measurements.* M.Ed. in Physical Education, 1972. 74 p. (L. W. McCraw)

Measurements were obtained on 114 college men to determine the relationship between power and strength of the thigh and leg muscles and the extent to which this relationship was affected by limb length. Pearson product-moment and partial *r*s were positive but low (.20 to .30) between jump and reach scores and speed in extending the legs as measured by a 100-sec. chronoscope. There was no appreciable change in these correlations when thigh and lower leg measurements were held constant.

556. RUSCH, Jeanne Margaret. *Personality traits and sports participation of adult women.* M.Ed. in Physical Education, 1972. 119 p. (D. Burdeshaw)

Personality traits as revealed by Cattell's 16 PF and background experience, as determined from a questionnaire, were used to compare 106 postcollege women participants in 6 different sports with 18 postcollege women nonparticipants. Nonparticipants scored higher on factor F (sober, happy-go-lucky) and factor I (tough-minded, tender-minded). Both groups scored higher on factor B (intelligence) than the average American woman at age 30. There were differences in personality among participants in the 6 sports groups. A substantially larger percentage of participants reported that their parents had participated in sports and had encouraged them to do so. Participants gave a need for activity as the primary reason for continued activity while nonparticipants indicated a lack of time as the reason for not pursuing sports.

557. **SPIRDUSO**, Craig Dennis. *Relationship between strength and speed as affected by limb length.* M.Ed. in Physical Education, 1972. 50 p. (L. W. McCraw)

Measurements were taken on 114 college men to determine relationship between speed of movement and strength in thigh and lower leg extension and to determine whether this was affected by limb length. Pearson product-moment rs between strength and speed were negligible (.14 or less) with no appreciable change in partial rs when holding limb length (thigh and/or lower leg) constant.

558. **STEPHENS**, Mary Walters. *An evaluation of video-tape replay in the acquisition of perceptual motor skills in beginning badminton classes.* M.Ed. in Physical Education, 1972. 105 p. (D. Burdeshaw)

College women (N=50) enrolled in 2 badminton classes, 1 serving as control group and the other as exp., were used to compare 12 wk. of instruction using traditional method plus videotaped feedback with traditional method only. Pretest and posttest measurements were obtained on a closed skill use of the Scott and Fox Long Serve Test and an open skill using the French Clear Test Number One. Results revealed that videotaped feedback did not aid in acquisition of skill at the beginning level but was of value if the skill level was high. Feedback was more beneficial in the closed skill than the open.

559. **RUMMEL**, Rose Mary. *An electromyographic analysis of patterns used to reproduce muscular tension.* Ph.D. in Physical Education, 1972. 123 p. (W. Wyrick)

College men (N=90) were used to analyze electromyographically the patterns used by highly accurate Ss and by less accurate Ss in terms of controlling muscular tension by reproducing a standard level of muscular tension. Patterns measured included rate of MAP production, variability in rate of production, and amount of intertrial MAP activity using biceps brachii of dominant arm to produce a criterion force of 25% of max isometric contraction force. Results from 100 trials of 10-sec. each revealed the more accurate group produced a lower rate of MAP and was more variable in the rate of MAP produced. Also they appeared to control MAP production over time better and to better use the full time allotted to the task, and to vary at will their muscular tension level and MAP rate. There were no differences between the groups in the amount of intertrial MAP activity and the ability to relax between trials was not related to succession reproducing the standard task.

560. **WILLIAMS**, Linda Clarke. *Activity preferences based on Caillois' game categories and personality of college women.* M.Ed. in Physical Education, 1962. 139 p. (W. Wyrick)

Cattell's 16 PF Questionnaire was used to determine the relationship between personality traits and the activity preference of 136 college women based on Caillois' category of games. Correlational and multiple discriminant analyses revealed that the women chose to participate in activities that represent predominantly 1 of Caillois' play classification, women choosing activities in predominantly 1 play category exhibit a personality profile which is different from those choosing activities predominantly in another play category, women choosing activities in predominantly 1 play category exhibit a difference in personality factors which distinguish them from those choosing activities predominantly in another play category.

Texas Woman's University, Denton, Texas (A. S. Duggan)

561. **ALBINS**, Geraldine. *The relationship between self concept and motor performance of sixth grade girls, eighth grade girls, and college women.* M.A. in Physical Education, 1972. 42 p. (B. Myers)

Self-concept was measured by the Tennessee Self Concept Scale and motor performance was measured by the Photoelectric Rotary Pursuit Tachometer, the Mirror Tracer with electric scoring, and the Dekan Automatic Performance Analyzer. Thirty 6th grade girls enrolled in an ELE school and 30 8th grade girls enrolled in a JHS school in Denton, Texas, and 30 college women enrolled in the required PE program at the Texas Woman's Univ. served as Ss. The data were collected from each group and presented in tabular form. Pearson product-moment r was utilized for determining the degree of relationship. A t test for significance of r was utilized. Conclusions were: a relationship existed between the ELE and JHS female students' ability to perform well on the pursuit rotor and mirror tracing; a relationship existed between the JHS girls' self-concept and their ability to perform on the pursuit rotor; no relationship existed between univ. women's scores on the pursuit rotor, mirror tracing, performance analyzer, or self-concept test; and MT was not related to performance ability on the pursuit rotor, mirror tracing, or self-concept test for each group.

562. **ARMSTRONG**, Ruby J. *A study of the relationship between the 600-yard run-walk and the 12-minute run-walk tests applicable to junior high school girls.* M.A. in Physical Education, 1972. 72 p. (J. Rosentswieg)

Girls ($N = 268$) from 6 JHSs, representing grades 7, 8, and 9 were subjected to the 600-yd. run-walk and the 12-min. run-walk tests on a 100 × 50 × 100 × 50 rectangular area. The Ms of the groups for completing the 600-yd. run-walk were: 7th grade Ss, 188 sec.; 8th grade Ss, 185 sec.; and 9th grade Ss, 182 sec. The Ms distance covered by the groups during the 12-min. run-walk were: 7th grade Ss, 1801 yd., 8th grade Ss, 1649 yd., and 9th grade Ss, 1842 yd. A modified step test was used as validity criterion for the run-walk tests. The r of the subgroups yielded 0.75 and 0.79, respectively. The data collected ascertained a negative r ($-.239$) between the 2-run-walk tests. It was concluded that either test is acceptable as a measure of endurance for JHS girls. The low r between the 2 measures and similar values for these tests with the validity criterion suggests that they measure different aspects of the step test.

563. BAUM, Mary Anne. *The relationship between participation in a program of dance therapy and changes in flexibility of selected joints of educable mentally retarded women.* M.A. in Dance and Related Arts, 1972. 89 p. (G. Hayes)

Ss ($N = 23$) ages 24 through 35 from the Wilton State School in Wilton, New York, were exposed to 30 sessions of dance therapy for a period of 6 wk. The units of dance therapy were developed in 3 sections: warm-up exercises, flexibility exercises, and natural movements. A goniometer was used to measure hip abduction, hip flexion, and plantar flexion before, after, and 6 wk. following the exp. period of dance therapy. A 1-way ANOVA with repeated measures indicated improvement in hip abduction and hip flexion after participation in a program of dance therapy for 6 wk.

564. BELL, Alice C. *Prediction of maximal oxygen intake in women 20-40 years of age.* Ph.D. in Health Education, 1972. 91 p. (M. Hinson)

Max O_2 intake (max VO_2) was assessed by the Monark Bicycle Ergometer from 30 female Ss 20-40 years old. Ss began at a workload of 300 kpm/min. When the same HR was observed for 2 consecutive 10-sec. periods, expired air was collected in Neophrene Latex Meterological Balloons. Increasing workloads of 150 kpm/min. were used to reach max VO_2. Criterion for max VO_2 was that VO_2 did not increase more than 80 ml over 2 consecutive workloads. Average max VO_2 was 19.74 ml/kgm/min. with a range between 31.1 ml/kgm/min. and 16.2 ml/kgm/min. Max VO_2 correlated with the variables of age, wt., resting HR, and performance time on the .5 mi. run at $R = .72$. The r between resting HR and max VO_2 was $r = -.55$, between max VO_2 and .5 mi. was $r = -.70$, between max VO_2 and .25 mi. run was $r = -.64$, all significant at ($p < .05$). The formula for predicting max VO_2 from the selected variables was: max $VO_2 = 42.12 + (-.627)880$ yd. $+ .198$ age $+ (-.172)$ wt. $+ .200$ RHR.

565. BREWER, Virginia. *Possible acute effects of short term exposure to air pollution upon cardiopulmonary function in adult women following exercise stress.* M.A. in Health Education, 1972. 66 p. (M. Hinson)

The Collins 13.5 Liter Respirometer and the Beckman Oxygen Analyzer were used to assess 4 measures of pulmonary function and efficiency: FVC, FEV_1, FMF, and % difference in relative O_2 content of expired air. All Ss ($N = 10$) were female, age 21 to 28, nonsmokers, free of chronic respiratory disease, and residents of nonmetropolitan areas. Pretest values were obtained under resting conditions, and control and exp. values after exercise stress using the bicycle ergometer. Control data were collected in a filtered air environment in Denton, Texas, while an urban area of Dallas, Texas, served as the exp. site. ANOVA and trend analyses showed ($p > .05$) for all measures. Though nonsignificant, there was a strong negative linear trend in the FVC following the exp. period.

566. BROWNING, Gloria S. *The influence of the alpha rhythm during mental practice while acquiring a specific tap dance skill.* Ph.D. in Dance and Related Arts, 1972. 201 p. (M. Kaprelian)

Undergraduate women ($N = 36$) were stratified into 3 groups of 12 Ss, each representing 3 types of learning situations: physical practice instruction, mental-physical practice instruction, and alpha mental practice instruction. To equate the 3 exp. groups, a rhythm-coordination screening test was constructed, tape-recorded, and administered to Ss who were rated on a pass-fail basis by a panel of 3 judges. Ss in the alpha mental practice group were taught to generate brain wave rhythms 8-13 cps verified by an EEG reading. Mental practice was found to be more effective than physical practice when the S was predominantly generating alpha rhythms. Mental practice while generating alpha rhythms was also found to be more effective than the technique of silently reading prepared materials during mental practice. Conclusions were based on the computation of the student's t test and ANOVA. In both cases the ANOVA yielded results which were significant at the .01 level.

567. CARTER, Jo Alice. *Relationships between health behavior and expressed attitudes toward*

acceptance of self and others among university women with respect to utilization of infirmary services. Ph.D. in Health Education, 1972. 144 p. (M. Tuck)

Data were collected with respect to health behavior, attitudes, and infirmary utilization on 150 university women in the College of HPER, Household Arts and Sciences; and Nursing. Health behavior was measured by the Cornell Medical Index-Health Questionnaire and attitudes were measured by the Acceptance of Self and Others Scale. Infirmary utilization scores were obtained from a Personal Data Sheet. There were no differences found between subjects in the 3 colleges with respect to the variables of physiological symptoms, psychological symptoms, acceptance of self, acceptance of others, and infirmary utilization. The selected variables were found to be inadequate predictors of infirmary utilization.

568. COPES, Kaaran H. *The influence of sleep deprivation upon fine and gross motor performance as indicated by selected skills of balance, reaction time, and movement time.* Ph.D. in Physical Education, 1972. 264 p. (B. Myers)

JHS boys (N=38) were placed into an exp. group and a control group, each comprised of 19 Ss. The exp. group remained in a state of wakefulness for 50 hr. whereas Ss in the control group adhered to their usual routine consisting of a normal night's sleep. Two fine motor performance tasks measuring skills of balance, RT, and MT; and 2 gross motor performance tasks measuring these same factors were administered to both groups at 12-hr. intervals during the exp. period. Deterioration occurred in 3 of the 6 motor performance components of JHS boys following 50 hr. of sleep deprivation. Fine RT and fine gross MT were influenced by the 50 hr. of wakefulness. Fine and gross balance and gross RT were not affected by the insomnia of 50 hr. duration. Sleep deprivation of 50 hr. may influence fine or gross motor performance of JHS boys depending upon the specific motor performance component. Less than 50 hr. loss of sleep did not appear to affect motor performance.

569. CROWLEY, Mirian F. *A modification of the Ohio State University step test for JHS age girls.* M.A. in Physical Education, 1972. 64 p. (J. Rosentswieg)

The validity and reliability of a modification of the Ohio State Univ. Step Test to measure the submax working capacity of JHS age girls was studied. Girls (N=100) enrolled in Bedford JHS in Bedford, Texas, were utilized as Ss. A test-retest protocol was used on the modified step test to establish reliability. Thirty Ss were given the Sjostrand test on the bicycle ergometer to establish validity. On the basis of the Pearson Product-Moment *r* between the test and the retest and between the retest and the bicycle ergometer test, the null hypothesis was accepted: The Ohio State Univ. Step Test as modified for this study was not a valid and reliable measure of the submax working capacity of JHS girls.

570. DOWNING, Margaret R. *Women's basketball: An historical review of selected organizations which influenced its ascension toward advanced competition in the United States.* Ph.D. in Physical Education, 1973. 150 p. (J. Rosentswieg)

A critical examination was made of the origin, purpose, membership, meetings, finance procedures, and powers and obligations of selected athletic organizations in the U.S. which influenced the rise of women's basketball toward advanced competition. Facts from primary sources were obtained by reviewing all available official records, proceedings, correspondence, and reports related to the activities of the selected organizations: the Women's National Basketball Committee of the AAU, the USOC for Women's Basketball, the National Girls Basketball League, the AAU-DGWS Joint Rules Committee, and the National Institute of Girls Sports. It was concluded that the crisis of World War II served as the prime factor which created a 2-fold change of attitudes toward the role of women in the American society: that of woman's attitude regarding her own capabilities; and the attitude of society in general toward woman's new position in all facets of life outside the home environment. As social attitudes and customs have become more equal, opportunities for women in the U.S. to compete at advanced levels in basketball have increased in comparison.

571. FLACH, Beverly M. *Recreation preferences of 103 Vietnam era veterans at the Veterans Administartion Hospital, Waco, Texas.* M.A. in Recreation, 1972. 83 p. (B. Lyle)

Information concerning REC interests of young hospitalized veterans was obtained through an original questionnaire covering 9 categories of activities. The instrument was administered by the investigator to all available male veterans under age 30 who were patients in the VA hospital, Waco, Texas. One hundred three questionnaires were completed through individual and small group interviews. Of the 140 activities included in the survey, 20 were chosen by 10% or more of the Ss: billiards and pool, 32%; listening to popular music on records and tapes, 25%; attending movies, 23%; fishing as a hobby, 22%; listening to the radio, 21%; fishing trips, 19%; bowling, 17%; swimming, 17%; riflery, 16%; watching television, 16%; horseback riding, 15%; pistol shooting, 15%; listening to country-western music on records and tapes, 14%; leatherwork, 12%; parties, 12%; social dancing, 12%; baseball, 11%; softball, 11%; dominoes, 11%; rap sessions, 11%. Comparative studies were made based on various population characteristics. Level of education and size of home community were the main characteristics which seemed to be related to choice of interests in some categories.

572. GELPI, Louise A. *A comparative study of leg strength at three specific knee angles among adult women.* M.S. in Physical Education, 1972. 41 p. (M. Hinson)

The study involved the use of 300 undergraduate women between the ages of 18 and 22 who were enrolled in PE classes. The Ss were tested at 3 angles: 60°, 90°, and 120° on the Elgin Strength Table. The reliability of this instrument was determined in a pilot study which consisted of 30 undergraduate Ss. A Pearson Product Moment *r* was computed revealing coefficients of reliability which ranged between .97 and .98 for the 3 knee angles. A 1-way ANOVA with repeated measures was computed and indicated a highly significant difference among the knee angles. The Duncan's Multiple Range test revealed that the 60° angle yielded higher scores than the 90° or 120° angle.

573. GREEN, Shirley A. *A study of the changes in hematocrit, hemoglobin concentration and cardiovascular endurance during an intensive training program for selected women track athletes.* M.S. in Physical Education, 1972. 106 p. (B. Lyle)

Determinations for hematocrit, hemoglobin concentration, and max VO_2 were ascertained for 4 sprinters and 3 distance runners 3 times during the academic year, before and after 2 periods of different training for the groups. The Ss were members of an intercollegiate track team at the Texas Women's Univ., Denton, Texas. The percentage of changes in the variables for the individuals and the groups following the intensive training periods were described. It was concluded that the intensity of the work in the sprinter's training program was greater for the sprinters than the intensity of work in the distance runner's program was for the distance runners.

574. GUNDERSON, Belmar S. *An electromyographic study of selected muscles in the tennis backhand drive.* Ph.D. in Physical Education, 1972. 147 p. (J. Rosentswieg)

The investigation analyzed, through electromyography and cinematography, the muscular activity and sequence involved in the execution of the tennis backhand drive. Nine women were Ss; 3 were beginners, 3 were intermediate, and 3 were advanced. Selected muscles of the upper arm, shoulder girdle, and trunk were studied. Findings showed the most consistent muscle portion for all Ss during the forward swing of the backhand drive to be the upper trapezius. The upper trapezius and posterior deltoid were most active and most consistent for all Ss during the followthrough of the tennis backhand drive. The semiskilled Ss showed the greatest inconsistency in the muscular activity but employed the greatest average velocity for the entire stroke. The skilled group demonstrated the greatest intragroup consistency of muscular activity during the forward swing of the backhand drive. The skilled Ss recorded the lowest average velocity for the total stroke while during the forward swing they approached the fastest recorded time. From the analysis of the data it was concluded that skill in the backhand drive in tennis was related to both consistency of the muscular sequence and the consistency of force of contraction.

575. JESTER, Lillian. *A study of the stress of associate degree nursing students in clinical operating room experiences.* M.A. in Health Education, 1972. 82 p. (D. Merki)

Nursing students (N=36) at Grayson County College, Denison, Texas, were assigned to 1 of 3 groups of N=12 each. Systolic blood pressure assessments were made on group 1 before, during, and after a lecture-demonstration class simulating surgery. Systolic pressure assessments were made on group 2 before, during, and after observing surgery; group 3 had systolic pressure assessments before, during, and after assisting the surgeons with major surgery. One-way ANOVA, and Duncan's Multiple Range Test indicated a difference within group 3 between the systolic pressure assessment before assisting the surgeons and the other assessments. It was concluded that the operating room experience of assisting the surgeons created a stressful psychophysiological setting among nursing students.

576. LEE, Amelia M. *Football participation and perceptual reduction of black and white sixth grade boys.* Ph.D. in Physical Education, 1972. 117 p. (C. Sherrill)

Data were collected, with respect to size estimation and time estimation, on 80 black and white 6th grade football players and nonathletes. Size estimation was measured by the Kinesthetic Aftereffect Apparatus and time estimation, in terms of 20 sec. and 2 min., was measured by a stop watch. There were no differences found regarding size estimation and 20-sec. time estimation. There was a difference with respect to 2-min. time estimation, with football players judging a 2-min. time period as passing more slowly than did nonathletes. Race was not related to perceptual reduction, with respect to size estimation and time estimation.

577 LOWRY, Carla. *Leadership functions, sources of power, and sources of group attraction involved in women's intercollegiate team sports groups.* Ph.D. in Physical Education, 1972. 177 p. (B. Myers)

Administrators of PE depts. (N=120) provided data pertinent to the present status of intercollegiate sport programs for women in Texas. Forty-eight administrators, 6 volleyball and basketball coaches, and 622 players provided scale values of 14 leadership functions, 5 sources of power available to the coach and sources of group attraction in women's intercollegiate team sport groups. Instruments used in the collection of data were a questionnaire, a participation check list, and 5 paired comparison instruments. Statistical procedures included a Test for Significance Between Two Proportions and Spearman Rank-Order Correlations. Conclusions included: intercollegiate athletics for women exist in 52% of the colleges and univ. in Texas; significant agreement exists among coaches, players, and administrators concerning the ascribed scale values for leadership and power functions to be performed by the coach; player-respondents more often assigned different rankings to leadership functions to be performed by the coach and by the player and the appropriate source of power than did coaches and/or administrators; and players, coaches, and administrators share the belief that the leadership functions of the coach should be task and maintenance oriented.

578 MESSERICH, Sandra M. *A cinematographic study of the basketball dribble.* M.A. in Physical Education, 1972. 52 p. (M. Hinson)

Ten men and 10 women varsity basketball players from the University of Wisconsin were filmed from the frontal and sagittal views with a 16-mm. camera set at 64 FPS. The dribblers contacted the ball initially with the ring, middle, and index fingers or with all 4 fingers simultaneously and lastly with the thumb. The dribblers released the ball initially with either the thumb or with the thumb and little finger and lastly with the middle and index fingers. The data showed no differences in the following mechanics: the shock absorption or "give" of the hand and forearm from initial contact to the highest point before the ball descended, the duration of time, in seconds, of contact of the hand with the ball, and the elbow angles at contact, high point, and release.

579. MILLER, Carol J. *A survey of selected characteristics of persons who work crossword puzzles.* M.A. in Recreation Administration, 1972. 81 p. (B. Lyle)

This investigation was designed to identify selected characteristics of persons who work crossword puzzles with respect to the crossword as a recreational and/or leisure time activity. Data were collected through the voluntary response to an original questionnaire printed in 3 Texas newspapers. Respondents to the questionnaire were 1991 males and females from the ages of 11 to 88. It was concluded that the largest percentage of persons who work crossword puzzles and who responded to the questionnaire are females, and/or housewives, 45 yr. of age or above. Crossword puzzle workers are well-educated, having either attended college, graduated from a college, or graduated from a business/vocational school. They obtain the puzzle every day from the newspaper and work the crossword from 6:00 a.m. to noon within the home. The main reason persons participate in this activity is for relaxation or the challenge it may offer.

580. McFADDEN, Pat. *The relationship between family size and agility, balance, flexibility, power, speed, and strength of elementary age children.* M.A. in Physical Education. 63 p. (J. Rosentswieg)

Nine motor ability measurements were taken on 570 ELE school children. The measurements were agility, balance lengthwise, balance crosswise, extent flexibility, dynamic flexibility, power, speed, pulling, and pushing strength. The children were divided into family size groups—1 child (N=38), 2 children (N=170), 3 children (N=156), 4 children (N=91), 5 or more children (N=115). A difference was found in the scores of the test for dynamic flexibility. The difference favored the single child over all other family size groups with the exception of the 4 children group. The 4 children group scored better than did the 3 children group. No other differences were found. The test of linearity for the scores indicated a trend for the balance lengthwise test. This indicates that there is a pattern for children from smaller families to do better than children from larger families on this particular test. No other linear trend was found. It was concluded that family size does not affect the motor performance of ELE school children.

581. MCMILLAN, MargeAnn Hume. *A cinematographic analysis of characteristic likenesses and differences between skilled, semi-skilled, and non-skilled performance of pirouettes.* M.A. in Dance and Related Arts, 1972. 109 p. (C. Sherrill)

A cinematographic analysis was conducted on performances of pirouettes en dehors by 9 women representing

3 different skill levels. A 16-mm. Bell and Howell HR 70 camera with a lens setting of f:1.6 was used in the filming. Tracings of 19 frames of film depicting the sagittal and frontal views of each S were analyzed with respect to the preparation, turn, and conclusion of the pirouette. Point-and-line drawings of the movements of the ankle of the supporting leg and the ear or nose were constructed from the same selected frames of both views of the pirouette and used to analyze the movement of the supporting leg and to determine the periods of greatest utilization of floor space. It was concluded that cinematography can be used to identify similarities and differences between skill levels, to determine the extent to which skill performances adhere to characteristics of "good form" as stated in the literature and by experts, and to provide new information which will contribute to a more complete understanding of the movement patterns used in the execution of a skill.

582. MURPHY, Alma F. *A study of the expressed attitudes toward physical education of freshman women enrolled in the required physical education program at the Arkansas Agricultural, Mechanical and Normal College, Pine Bluff, Arkansas during the spring semester of the academic year of 1971-1972.* M.A. in Physical Education, 1972. 62 p. (J. Rosentswieg)
Measurements were taken on 216 women Ss before, during, and after participation in the required PE program by means of Wear Physical Education Attitude Inventory to determine if a change occurred in the expressed attitudes during a semester. ANOVA and paired t test were used. A ($p<.01$) positive change occurred from the time of the initial test administration to the final measure. It was concluded that the change that occurred could be attributed to uncontrolled variables as appropriately as it could be to the curricula.

583. ORTIZ, Carmen D. *A cinematographic analysis of the forehand counterdrive, forehand loop, and forehand topspin serve in table-tennis.* M.A. in Physical Education, 1972. 59 p. (M. Hinson)
Three highly skilled table tennis players were filmed at 64 FPS as they performed the forehand counterdrive, forehand loop, and forehand topspin serve in table tennis. The kinesiological similarities and differences of the 3 strokes were determined. The study revealed: all Ss hit the ball faster with the counterdrive than with the loop or serve; during the loop, all Ss increased the racket velocity after contact; all Ss contacted the ball with a closed racket on the forehand counterdrive and with a flat racket on the loop; the closer to horizontal the approach of the racket, either the greater the topspin that must be imparted to the ball, or the smaller the velocity than can be generated in order to drive it to the opposite side of the table; during the 3 strokes all Ss contacted the ball at waist level and imparted topspin to it by swinging the racket forward and upward during the forward swing and the followthrough.

584. RAE, Carole Y. *Dance commentary: An original suite of fourteen dances based upon the evolution of dance through the ages of man.* Ph.D. in Dance and Related Arts, 1972. 328 p. (A. Duggan)
Fourteen dance compositions were choreographed in the idioms of primitive, ethnic, ethnological, preclassic, ballet, modern, and jazz dance and produced in the form of a dance commentary. The dance suite was performed by 11 Ss and was produced 11 times within the states of Arkansas, Kansas, Oklahoma, and Texas. A written report of the study was comprised of a discussion of the dance commentary method of dance production, a brief resume of selected periods and forms of dance from primitive man through the present era, and a description of the 14 dances with respect to thematic content, narration, form in which each dance was structured, number of participating dancers, basic movement motifs, accompaniment, costumes, hair styles, and stage properties. A videotape of the production is available.

585. RAMIREZ, Mary Angella. *A study of factors related to speed of running and reaction time among black, Mexican-American, and white females eleven years of age in the performance of the 50-yard dash.* M.A. in Physical Education, 1972. 60 p. (B. Lyle)
A comparative study was conducted to measure RT and speed of running between various segments of the 50-yd. dash; specifically, 15-yd., 30-yd., 50-yd., starting time, acceleration speed, and max sprint velocity. Ss were 100 black, 55 Mexican-American, and 45 white. Data were collected by electric timers, electric eye rods, and a modified starting pad. ANOVA showed no differences in wt., ht., and RT among the black, Mexican-American, and white groups. Differences ($p<.01$) were obtained between the groups in favor of the black child on speed of running at various segments. Similar differences were noted in comparisons of starting time, acceleration speed, and max sprint velocity. No differences were discovered between the white and Mexican-American children. The investigator concluded that black children have faster times in running the 50-yd. dash and faster comparable segments than white or Mexican-American children of similar age, grade level, ht., and wt.

586. RANNALD, Bonnie G. *The relationship between dynamic balance and reaction time in college*

women. M.A. in Physical Education, 1972. 45 p. (M. Hinson)
Measures of simple RT, total body RT, dynamic balance time on the stabilometer and dynamic balance touches on the stabilometer were taken on 50 undergraduate women majoring in PE. The skills used for the investigation were: balancing on a stabilometer, pressing a digital switch with the index finger to a visual stimulus, and jumping off a floor response mat to a visual stimulus. A .001-sec. standard timer was adapted to record all measures of elapsed time. Correlation coefficients showed no significant *r*s with respect to the following measures: total body RT and dynamic balance time on the stabilometer; simple RT and dynamic balance on the stabilometer; total body RT and dynamic balance touches on the stabilometer; simple RT and dynamic balance touches on the stabilometer; and dynamic balance time and dynamic balance touches on the stabilometer. A significant *r* was found to exist between simple RT and total body RT.

587 REED, Claudia R. *A study of the differences exhibited by Negro and Caucasian JHS girls on a test of cardiac efficiency (SWC 170).* M.A. in Physical Education, 1972. 52 p. (J. Rosentswieg)
The Submax Working Capacity Test-170 (SWC-170) was administered to 148 JHS girls, consisting of Negroes (N=71) and Caucasians (N=77). ANOVA revealed a difference in the minute by minute progressive workloads and between the groups in favor of the Negro students. The M HR of the Caucasians were consistently higher throughout the test. The major finding of this study was the result of the Negro girls being more physically fit than the Caucasian girls, or that contrary to Negro males in comparison with Caucasian males, Negro females may have a superior cardiopulmonary system to Caucasian females.

588 RICE, Nina Daniels. *A study of physical education in the junior colleges of Texas.* Ph.D. in Physical Education, 1972. 190 p. (B. Myers)
The present status and projected future developments in the PE programs of the public and private jr. colleges of Texas were defined. The questionnaire study included Academic Deans and PE Chairmen of 57 jr. colleges. A 100% response was received. Conclusions of the study were: smaller enrollments exist in the private colleges than in public colleges; no common pattern of administrative policy with respect to tenure, academic rank, or written evaluations of faculty exists; PE is required in a majority of the colleges and coed courses are frequently offered; intramural sports are prevalent, but intercollegiate activities do not occupy a position of prominence; facilities are supplemented by renting, leasing, or borrowing those of the community; twice as many men as women are employed as faculty in the PE dept. and few women assume an administrative role; and increase in enrollments is anticipated indicating increased need for facilities, course offerings, and faculty.

589 SEITZ, Judith C. *A cinematographic analysis of hip and knee rotation during execution of the whip kick.* M.A. in Physical Education, 1972. 59 p. (M. Hinson)
Data were collected from 22 college women swimmers by: judges' ratings, the Fox-Rosentswieg modified swimming power test, and filmings. Intercorrelations for the 3 instruments were calculated using the Spearman Rank-Order technique. A $(p < .05)$ was found for: judges' ratings and degrees of thigh rotation, swimming power test and the degrees of thigh rotation, swimming power test and the degrees of knee rotation, and the degrees of thigh rotation and knee rotation. A $(p < .05)$ was found when the judges' ratings were compared with the degrees of knee rotation and the swimming power test. A greater amount of outward than inward thigh rotation was established by 68% of the Ss, while 64% of the Ss exhibited a greater amount of outward knee rotation.

590 TEVIS, Betty W. *Relationships of information and attitudes concerning alcohol to the drinking behavior of 10th grade students in selected "wet" and "dry" areas of Texas.* Ph.D. in Health Education, 1972. 198 p. (M. Tuck)
An alcohol information test, an alcohol attitude scale, and a drinking behavior questionnaire were administered to 1315 10th grade students. Two-way ANOVAS revealed no differences $(p > .05)$ between groups with respect to "physiological" information and attitudes toward temperate use of alcohol. Differences $(p < .05)$ were found: boys in both "wet" and "dry" environments reported heavier drinking, expressed more current problems, and professed more tolerant attitudes toward irresponsible use of alcohol than did the girls in the same environments. Girls in the "dry" environment scored higher on the "general" information portion of the test than did the other 3 groups. There were no *r*s between information and attitudes, nor between information and behavior. There were moderate *r*s between reported drinking behavior and attitudes toward temperate and irresponsible use of alcohol.

The University of Toledo, Ohio (J. N. Drowatzky)

591 ALTHOFF, Sally A. *The relationship of social class status, alienation, and selected social-psychological factors to drug use in the tenth and twelfth grades.* Ph.D. in Health, 1971. 145 p. (E. J. Nussel)

592 COLEMAN, Jeanne. *Social interaction within a movement education program for second grade children.* M.Ed. in Physical Education, 1972. 103 p. (J. Broekhoff)

593 GILMORE, George B. *An experimental study to determine which of five different practice procedures is more effective in the acquisition of a complex motor skill.* Ph.D. in Physical Education, 1972. 90 p. (J. N. Drowatzky)

This study investigated the effectiveness of five different practice conditions used in the acquisition of the modified kip. Practice conditions were: controlled mental practice (CMP), uncontrolled mental practice (UMP), physical practice (PP), physical practice alternated with controlled mental practice (PP/CMP), and a placebo control (PC). The study also considered whether experience and/or sex differences influenced the effectiveness of the practice conditions. Ss were 60 male and 60 female univ. students between the ages of 18 and 25 yr. They were assigned to the cells of a 2 × 2 × 5 factorial ANOVA design. Male (N = 45) and female (N = 44) Ss completed their exp. assignments properly, all others were excluded. Exp. instructions were presented orally, symbolically, and visually. ANOVA revealed significant F ratios for sex, practice condition, and sex by practice condition interaction. For postmortem comparisons Scheffe's test was used. These results (UMP, PP, and PP/CMP) were superior to CMP and PC for male Ss, and the interaction effect was caused by the males being more adept in using UMP and PP than the females in this study.

594 GIRDANO, Daniel A. *Urinary 5-hydroxyindoleacetic acid and physical stress.* Ph.D. in Physical Education, 1970. 84 p. (J. Burt)

595 HOWES, Sandra L. *The relationship between the home environment and the development of motor skill proficiency in high shcool girls of high and low motor skill proficiency.* M.Ed. in Physical Education, 1971. 69 p. (H. G. Williams)

596 JENKINS, Robert R. *Effects of swimming on carcass composition and epinephrine-sensitive activity in hyperphagic rats.* Ph.D. in Physical Education, 1972. 27 p. (D. L. Lamb)

The effects of swimming on carcass composition and epinephrine-sensitive lipase activity were studied in 30 Sprague-Dawley derived rats. Rats were exercised for 30 min. a day for 5 days a week over a period of 8 wk. Exercise failed to produce a reduction in carcass wt. in the lesioned rats although a wt. reduction in normal exercised rats was observed. There was a loss of carcass fat associated with exercise in both normal and lesioned rats. Carcass water was not affected by exercise in lesioned rats although an increase was observed in normal exercised rats. Exercise did not affect epinephrine-sensitive lipase activity.

597 LANGERHORST, Christina T. *The implications of Buxtenduk's work for physical education: A critical analysis.* M.Ed. in Physical Education, 1971. 88 p. (J. Broekhoff)

598 LINDNER, Koenraad J. *The relationships between measures of physical fitness and selected electrocardiographic variables in fourth graders.* M.Ed. in Physical Education, 1971. 62 p. (J. Broekhoff)

599 LOWE, John M., Jr. *Motivation, task complexity, and cue utilization in performance of a motor skill.* Ed.D. in Physical Education, 1971. 13[illegible] p. (W. F. Updyke)

600 LYNN, Ronald W. *Effects of massed and distributed practice on the rate of learning and retention of a fine and a gross perceptual-motor skill.* M.Ed. in Physical Education, 1971. 80 p. (J. N. Drowatzky)

The analysis of pursuit rotor performance and the lacrosse throw yielded differing results. There were no differences between practice conditions in the acquisition of mirror tracing skill. Distributed practice for the lacrosse throw was significantly more effective than massed practice for both learning and retention. Improvement in performance from practice to practice was noticed for both skills. Ss who were designated as athletes achieved higher levels than nonathletes on the lacrosse throw. This difference did not appear for the mirror tracing skill. It appeared that the level of performance in mirror tracing was a function of the number of practice trials while the lacrosse throw performance depended upon amount of practice, the practice conditioning used, and past gross motor experience.

601 PROOST, Jan. *The concept of fair play in Homer's Greece.* M.Ed. in Physical Education, 1972. 48 p. (J. Broekhoff)

602. SIMNITT, Jerome A. *Self-assessment tendencies of sixth grade boys and girls and the relationship between these tendencies and five selected factors of self-concept.* M.Ed. in Physical Education, 1972. 81 p. (J. Broekhoff)

603 SLOBOF, Harold. *Health knowledge of senior students and health education programs of the secondary schools in Toledo and Lucas County, Ohio.* Ed.D. in Health, 1970. 105 p. (J. Burt)

604 TAYLOR, Paul B. *Structure and function of cardiac mitochondria in exhausted guinea pigs.* Ph.D. in Physical Education, 1972. 32 p. (D. L. Lamb)

The ultrastructure and functional capacity of mitochondria from hearts of exhausted and rested guinea pigs were compared. Electron micrographs of heart ventricles were examined for ultrastructural alterations, and functional capacity was studied by O_2 polarography. Swelling of mitochondria from exhausted animals was indicated by a reduction in mitochondrial surface/volume ratio and an increase in volume density of mitochondria from exercised animals when compared to controls. The yield of isolated mitochondria from exhausted guinea pigs was similar to that for control animals. In the presence of all substrates tested, the rate of O_2 consumption was lower in the exhausted animals than in the controls. The ADP/O ratios and respiratory control indices for pyruvate, succinate, and ascorbate were not systematically affected by exercise. With glutamate as substrate respiratory control was reduced in exercised guinea pigs. These exp. suggest that the structure of myocardial mitochondria from exhausted animals is sufficient to maintain normal ADP/O ratios but is not adequate to maintain normal rates of respiration.

University of Utah, Salt Lake City, Utah (R. O. Ruhling)

605 ALBAUGH, Glen R. *A comparative study of the ability of basketball coaches to assess the personality traits and profiles of their players.* Ph.D. in Physical Education, 1970. 78 p. (O. N. Hunter)

606 ANDERSON, Gwenn. *The relationship of four tests of balance: Two tests of static balance and two tests of dynamic balance.* M.S. in Physical Education, 1972. 53 p. (B. H. West)

607 AUSTIN, Kenneth J. *A survey of various aspects of driver education in the public high schools of Utah.* M.S. in Physical Education, 1970. 57 p. (O. N. Hunter)

608 AXTELL, Alan R. *Guidance situations and guidance training of physical educators.* M.S. in Physical Education, 1971. 56 p. (O. N. Hunter)

609 BAILEY, Charles I. *Athletes' perception of coaches.* Ph.D. in Physical Education, 1972. 97 p. (K. P. Henschen)

610 BARTEL, Adalbert K. *A survey to determine the factors contributing to the success or failure of commercial shooting preserves within the state of Utah.* M.S. in Recreation, 1971. 127 p. (L. R. Rockwood)

611 BEITZ, Dennis E. *A health appraisal questionnaire for secondary students.* Ph.D. in Health, 1972. 86 p. (C. O. Ness)

612 BENNETT, Jesse C. *An evaluation of physical education programs for men in selected universities of North Carolina.* Ph.D. in Physical Education, 1971. 219 p. (L. E. Griffin)

613. BIDWELL, Dwight R. *The effects of selected physical education activities on the development of Head Start children.* Ed.D. in Physical Education, 1970. 77 p. (O. N. Hunter)

614 BOWIE, Gerald W. *A survey to obtain relevant information from selected colleges in the Province*

of Alberta to develop and apply an evaluation instrument for men's physical education programs. Ph.D. in Physical Education, 1970. 398 p. (O. N. Hunter)

615. BRACKETT, Louis V. *A descriptive survey to determine the current status of therapeutic recreational programs in the treatment setting directed toward emotionally disturbed children.* M.S. in Recreation, 1971. 99 p. (J. Squires)

616. BROUGH, Franklin K. *The effect of two instructional procedures on the performance of the spirometry test by children in grades K-2.* Ph.D. in Health, 1971. 76 p. (C. O. Ness)

617. BUCK, John W. *Relationship of health behavior to the adjustment of selected high school seniors.* Ph.D. in Health, 1971. 96 p. (C. O. Ness)

618. BUNNELL, Lee L. *The effect of resistance training on backward running speed in American Football.* M.S. in Physical Education, 1971. 39 p. (O. N. Hunter)

619. BURGENER, Owen R. *Growth patterns of economically stratified sixth-grade pupils in the Alpine, Nebo and Provo School districts.* Ph.D. in Health, 1972. 96 p. (C. O. Ness)

620. BUXTON, Nedra G. *A capacity scale for third grade children.* M.S. in Physical Education, 1970. 62 p. (N. P. Neilson)

621. CARPENTER, Gene A. *A score card for evaluation of health instruction programs in high schools.* Ed.D. in Health, 1971. 94 p. (C. O. Ness)

622. CARTER, George F. *A comparison of selected instructional methods in teaching basketball skills.* Ed.D. in Physical Education, 1971. 154 p. (J. R. Ewers)

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626. COOK, Paul R. *A survey to determine if current coaches and officials believe that specific NCAA and National Federation Football rules should be unified.* Ed.D. in Physical Education, 1971. 163 p. (O. N. Hunter)

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634. FLOYD, Jerald D. *An investigation of the attitudes toward physical education of intercollegiate athletes and non-intercollegiate athletes at selected state universities of Illinois.* Ed.D. in Physical Education, 1971. 127 p. (O. N. Hunter)

635. FRANCIS, Rulon S. *The effect of 17-hydroxycorticosterone on the connective tissue of the adult male rat.* Ph.D. in Health, 1971. 83 p. (N. Randall)

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637. FUERTGES, Donat R. *The effect of programmed instruction on selected tennis skills, knowledges and attitudes.* Ph.D. in Physical Education, 1971. 113 p. (J. R. Ewers)

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639. GANS, Marvin. *Sequential steps in planning facilities for health, physical education, recreation, and athletics.* Ph.D. in Physical Education, 1972. 150 p. (O. N. Hunter)

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643. GUSTAFSON, John A. *The effects of programmed instruction and modular open-block scheduling on student attitude toward physical education.* Ph.D. in Physical Education, 1972. 177 p. (L. E. Griffin)

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650. HUNDLEY, Charles D. *A comparison of teacher characteristics with ressentiment scores of selected sixth grade teachers.* Ph.D. in Health, 1971. 73 p. (C. O. Ness)

651 HURLEY, Robert S. *The effects of seasonal training on selected body zinc levels of collegiate wrestlers.* Ph.D. in Health, 1972. 65 p. (C. O. Ness)

652 HUTCHISON, Wallace W. *The effects of exercise training on serum levels of thyroxine.* Ph.D. in Physical Education, 1971. 86 p. (A. Gustafson)

653 JACOBSON, Phyllis C. *The importance of certain factors in teacher preparation for teacher-pupil relations.* Ph.D. in Physical Education, 1971. 78 p. (N. P. Neilson)

654 JENSEN, Barbara H. *The relationship of parental attitudes to the motor achievement of junior high school girls.* M.S. in Physical Education, 1970. 69 p. (L. E. Griffin)

655 JOHNSON, Edward A. *Football players' selection of a university.* M.S. in Physical Education, 1972. 68 p. (K. P. Henschen)

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664 MAPES, Jack C., Jr. *Student, parent, and teacher interests in health education in Davis County high schools.* M.S. in Health, 1972. 62 p. (C. O. Ness)

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703. TIEDEMANN, Russell G. *The effects of isometric arm exercises on elbow injuries among college baseball players.* Ed.D. in Physical Education, 1971. 110 p. (O. N. Hunter)

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706. WALKER, Charles. *A biography of Neils P. Neilson and his contributions to health, physical education and recreation.* Ph.D. in Physical Education, 1972. 227 p. (L. E. Griffin)

707 WALMSLEY, Harry A. *A comparative survey of selected duties and responsibilities of collegiate chairmen in physical education departments in selected institutions in the United States.* Ed.D. in Physical Education, 1970. 239 p. (L. E. Griffin)

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710 WILCOX, Ronald J. *A comparison of two weight training methods designed to develop leg strength.* Ph.D. in Physical Education, 1971. 108 p. (L. E. Griffin)

711 WOLFE, George A. *The effects of ambient temperature changes on total serum cholesterol during rest and acute exercise.* Ph.D. in Physical Education, 1971. 90 p. (A. Gustafson)

712 WOODLAND, William R. *The development of a model shade-tree ordinance with special application to Salt Lake City, Utah.* Ph.D. in Recreation, 1971. 162 p. (L. R. Rockwood)

713 WOODRUFF, Cecil C. *A study of the effects of abdominal cold pack application on abdominal strength and endurance.* Ph.D. in Physical Education, 1970. 76 p. (L. E. Griffin)

714 WURZER, David J. *A comparison of methods in teaching the skills of golf.* Ph.D. in Physical Education, 1972. 78 p. (L. E. Griffin)

Washington State University (K. A. Penman)

715 HASTAD, Douglas N. *Authoritarianism and its relationship to success in coaching high school football and basketball.* M.S. in Physical Education, 1972. 52 p. (R. H. Doornink)

The purpose of this investigation was to determine the relationship between the degree of authoritarianism exhibited by coaches and their success in coaching basketball and football, as determined by their win-loss percentage. The Ss used were head football and head basketball coaches in AA SHSs in the state of Minnesota. The instrument used in this investigation was a 48-item modified F-scale Rokeach Dogmatism Scale devised to measure general authoritarianism exhibited by a given S. The 28 Ss were categorized into 2 groups: a basketball (N=14) and a football (N=14) group. The Mann-Whitney *U* Test was then applied to compare the upper 3rd, or "more successful" coaches and the lower two-thirds, or the "less successful" coaches. The results indicated that there was no difference between the "more successful" coaches and the "less successful" coaches in regard to the authoritarian nature of their personality ($p < .05$).

716 HOLLISTER, Susan M. *Attitudes toward athletic competition for girls and women as related to religious commitment.* M.S. in Physical Education, 1972. 50 p. (D. Coleman)

The purpose of this study was to determine the relationship between degree of religious commitment and attitudes of male and female undergraduate students at Washington State Univ. toward intensive athletic competition for girls and women. The subproblem was to determine which of 6 sports were considered most or least desirable for intensive athletic competition for girls and women. A questionnaire, which included the Harres attitude scale, was administered to 480 undergraduate students. The results indicated that respondents possessed favorable attitudes toward intensive athletic competition for girls and women. The r technique failed to detect any relationship ($p > .05$) between degree of religious commitment and attitudes toward intensive athletic competition for girls and women. However, social class and academic class were related to the r between religious commitment and attitudes toward such competition. Students considered individual sports more favorable than team sports for competition by girls and women.

717 LEWIS, Carolyn M. *Relationship of selected personality attributes of women and their susceptibility to spectator influence during physical activity.* M.S. in Physical Education, 1972. 48 p. (M. L. Enberg)

College women (N=36), 18 intercollegiate basketball players, and 18 fresh. basketball activity class members were Ss in an investigation of relationships of a passive audience (PA) and an unseen critical audience

(UA) with motor performance. Relationships between individual performance changes under exp. conditions and selected personality characteristics were examined. Personality scales for the 2 groups were also compared. A modification of the AAHPER Under Basket Shoot Test was performed under no audience, PA, and UA exp. conditions. Passive audience consisted of 40 undergraduate students. The unseen critical audience consisted of a videotape camera and instructions that performance would be taped and critically analyzed. A difference ($p < .01$) was reported between groups on the performance test. Rho correlations and Z tests yielded a relationship ($p < .01$) between individual performance changes under PA and those Ss viewed as sensitive to criticism and relationships ($p < .15$) between PA performance increase and characteristics of wanting sympathy and easily influenced. In terms of personality differences, t tests indicated difference ($p < .01$) on only 1 variable: intercollegiate Ss were more sensitive to criticism than fresh. activity class Ss.

718. OGDON, Carol J. *Attitudes of physical education teachers in the Northwest toward interscholastic athletic competition for high school girls.* M.S. in Physical Education, 1970. 73 p. (M. Phillips)

The subproblems of this study were to compare the attitudes of: teachers in each of the 5 states, male and female teachers, teachers 30 yr. of age and under, and teachers over 30 yr. of age. A revised version of the McGree Attitude Scale was administered to 1,000 physical educators in the SHSs of the Northwest. The results of the study indicated that, although teachers were generally favorable toward interscholastic athletic competition for girls, there were wide differences of opinion regarding the issue. ANOVA failed to detect any differences ($p > .01$) between the attitudes of: PE teachers in the 5 Northwest states, male and female teachers, and teachers 30 years of age and under and teachers over 30 yr. of age.

719. OGLESBY, Billie F. *An electromyographic study of the rectus abdominis muscle during selected gymnastics stunts.* M.S. in Physical Education, 1969. 35 p. (M. Adrian)

The upper, middle, and lower portions of the rectus abdominis were tested using bipolar electromyography in order to determine the function of this muscle in the execution of 7 gymnastics stunts. Performances of the 6 women gymnasts and the corresponding EMG's were videotaped. The EMG's were analyzed as a percentage of a max trunk flexion test administered prior to performance. Two gymnastics coaches rated the performances of the stunts using the videotape. Data were analyzed using a visual descriptive method and ANOVA. It was found that the rectus abdominis muscle functioned significantly in the front limber, the back bend, the forward roll on the balance beam, and the kip and single-leg shoot-through on the uneven parallel bars. The lower portion of the rectus abdominis was more active than either of the other 2 muscle portions. There existed among Ss a definite pattern of electrical activity unique to each stunt.

720. OLSON, Donna J. *The relationship of certain external motivational variables and personality traits to performance in archery.* M.S. in Physical Education, 1971. 52 p. (M. L. Enberg)

This study was designed to ascertain if archery performance would be improved when the instructor used certain methods of external motivation compared with performance when the instructor eliminated these methods. An attempt was made to determine whether certain personality traits as measured by Edwards Personality Inventory would be related to performance under exp. and control conditions (N=44). Both groups received the same basic instruction in archery, and in addition, the instructor utilized several common motivational techniques with the exp. group. During the last week of the exp. both groups were evaluated on archery performance by use of the AAHPER Indoor Archery Postal Tournament. The results indicated that there was no difference between the groups on archery performance under the 2 conditions; however, the control group was ($p < .01$) more motivated to succeed by the EPI index. The EPI traits, motivated to succeed, plans work efficiently, and cooperativeness, emerged as being somehow related to performance both between and within groups.

721. SAUBERT, Carl W. *Effect of sprint and endurance training in selected anaerobic enzymes in rat skeletal muscle.* Ph.D. in Physical Education, 1972. 59 p. (P. D. Gollnick)

The adaptability of several glycolytic enzymes to chronic sprint and endurance exercise has been investigated. Thirty male Sprague-Dawley rats were subjected to spring running, endurance running, or were nonexercised controls. Succinate dehydrogenase activities were highest in the red gastrocnemius, red vastus lateralis, and soleus muscles and lowest in the white gastrocnemius muscle. Neither endurance nor sprint training altered this relative pattern or the oxidative potentials of the muscles. Phosphorylase, phosphofructokinase, and pyruvate kinase activities were highest in the white gastrocnemius muscle, followed by the red vastus lateralis muscle and then the red gastrocnemius muscle. These muscles all had glycolytic enzyme activities 3- to 9-fold higher than those of the soleus muscle. Endurance training was without effect on glycolytic enzyme activities in all muscles. Only the soleus muscle showed a consistent increase in glycolytic capacity in response to sprint training. The findings indicate that most skeletal muscles possess sufficient glycolytic enzyme capacity to meet the demands of heavy, intermittent work without adaptation to a higher level.

722. SEAGRAVE, Jeffrey O. *Comparison of group cohesiveness in club and varsity athletic teams for men.* M.S. in Physical Education, 1972. 65 p. (D. Coleman)

The 2 sports clubs studied were Soccer (N=30) and Rugby (N=20); the 2 varsity athletic teams used were the Baseball (N=25) and Track and Field Teams (N=21). The test items used were the Group Cohesiveness Index and the Valency Questionnaire. The Ss were interviewed either individually or on a group basis. Analysis was accomplished on an inter- and intragroup basis by the application of a 1-way ANOVA. A nonparametric Mann-Whitney *U* Test was also used to compare final Ms between varsity and club groups. A greater degree of group cohesiveness was found to be present in the sports clubs than the varsity athletic teams. Moreover, this finding was reinforced with regard to the Valency Questionnaire. The sports clubs showed a greater attraction-to-group than the 2 varsity athletic teams. It was concluded that the sports club type of organization appears to be more effective than the varsity type in achieving group cohesiveness among college athletics for men.

723. WATERS, Joseph A. *A comparison in motor achievement between two types of elementary physical education programs.* M.S. in Physical Education, 1972. 31 p. (R. H. Doornink)

The purpose of this study was to compare the long-range effects of Pullman, Washington's innovative ELE school PE program on motor achievement to Moscow, Idaho's traditional ELE school, game, fitness, and sports oriented PE program. A total of 144 4th and 5th grade boys and girls were tested. Both groups participated in their regular PE program at their respective schools. The exp. group received 2 35 to 40 min. instructional classes weekly plus a 40 min. activity period each Friday. Emphasis of the exp. group was placed on fitness, rhythm, body management, and visual tactile coordination. The control group received 2 30 min. instructional classes per week. The control group's PE emphasis was placed in the areas of fitness, sport, and game. Data were obtained from the administration of the Latchaw Tests of Motor Achievement. When analyzed by sex and grade, 28 comparisons were made between the 2 groups. Of the 28 comparisons, 17 were found significant in favor of the exp. groups. When analyzed by sex only, 7 of the 14 comparisons made were found significant in favor of the exp. groups.

724. WILDER, Judy A. *Evaluation of selected girls physical education service area facilities in the state of Washington.* M.S. in Physical Education, 1972. 73 p. (C. E. Gordon)

Thirty SHS with 32 girls' PE service area facilities were evaluated using a new critique instrument. The instrument was divided into 5 sections: PE office, PE locker room, PE shower room, PE storage areas, and PE custodian supply room. The categories within each section were obtained through information presented by the National Facilities Conference in their publication, *Planning Areas and Facilities for Health, Physical Education, and Recreation.* The visitation disclosed that most sections within the girls' PE service area facilities were deficient.

(E. N. Norris)

West Chester State College, West Chester, Pennsylvania

725. ROSSI, L. Douglas. *Health, sanitary, and medical procedures related to care and treatment of wounded soldiers in the American Civil War.* M.S. in Health and Physical Education, 1972. 328 p. (R. S. Sturzebecker)

Study examines the military's medical procedures in the Civil War and their impact upon postwar medical achievements. Historical data are presented pertaining to the following areas of Civil War medicine: organization and functions of the U.S. Medical Dept. and the volunteer relief associations, the doctors and nurses who served during the war, the system of field and general hospitals, the transportation of wounded, and the nature and treatment of war injuries. It was concluded that shortcomings were rarely due to negligence or incompetence of the medical officers; failure of the medical service lies in the backward state of medical science and technology during the war period. The task of the Medical Dept. and its staff was an enormous one, and the Dept. was not wholly prepared for such an undertaking in regard to supplies, facilities, experience, and knowledge.

(G. W. Hermann)

Western Illinois University, Macomb, Illinois

726. CLARK, Scott A. *Psychological characteristics of athletes and non-participants in athletics.* M.S. in Physical Education, 1972. 33 p. (G. W. Hermann and V. L. Joy)

Cattell's 16 PF and Culture Fair Intelligence Test were administered to the male population of Macomb SHS. A comparison of athletes versus nonparticipants revealed differences ($p < .05$) between the Ms of factor M (practical versus imaginative) and the *VIII* (less superego strength versus more superego strength)

2nd order factor. When fresh. athletes were compared to sr. athletes differences ($p < .05$) were found on factor G (expedient versus conscientious) and the CFI. The comparison between fresh.-soph. athletes versus jr.-sr. athletes resulted in differences ($p < .05$) for the *G*, *O* (self-assured versus apprehensive) factors and the CFI. Interscholastic athletic participation appeared to develop a responsibility toward moral standards, sense of duty, and qualities of leadership. These qualities were demonstrated by jr. and sr. athletes while the fresh.-soph. group exhibited happy-go-lucky attitudes.

727 CZARINEWSKI, Robert D. *Comparison of fourth grade children from parochial and public schools on dynamic and static balance.* M.S. in Physical Education, 1972. 30 p. (R. B. Swedburg)
Fourth grade children ($N = 200$) from the parochial and public ELE schools in Quincy, Illinois were administered the Bass Test on Dynamic Balance and the Bass Stick Test of Static Balance. The t test results were not significant for either test of balance ($p > .05$). Results indicated that dynamic and static balance skills of 4th graders were independent of whether these children attended parochial or public schools.

728 GOZDECKI, Thomas B. *A survey of physical education programs in residential schools for blind children in the United States.* M.S. in Physical Education, 1972. 90 p. (G. W. Hermann)
Thirty six residential schools for blind children in the U.S. returned the survey instrument relating to the PE activity program, teaching personnel, and PE facilities. There existed much variation in activities taught; however, there seemed to be emphasis on specific activities such as wrestling, track and field, swimming, and bowling. Physical educators were inexperienced in teaching PE to blind children in addition to needing specialized training in this field of education. Facilities in residential schools appeared to be adequate for providing well-rounded PE programs for blind children.

729 JACKEL, Larry A. *Comparisons of maximum grip strength, grip strength endurance, grip hanging time, and body weight in third and fourth grade children.* M.S. in Physical Education, 1972. 43 p. (P. W. Hutinger)
One hundred 3rd and 4th grade boys and girls were measured for wt., left and right hand grip strength, left and right hand grip strength endurance, and hanging time. The M max grip strength of male Ss for the left hand was 10.28 kg. and 11.54 kg. for the right hand. The M max grip strength of female Ss for the left hand was 7.43 kg. and 8.86 kg. for the right hand. The Pearson product-moment rs indicated that the measured variables of wt., right and left hand grip strength, and right and left hand grip strength endurance correlated modestly to highly in their various combinations. Correlations of a low level were found between hanging time and the other variables. It was concluded that hanging time was not a suitable testing procedure to determine grip strength or grip strength endurance with any degree of accuracy.

730 KNAPP, Kenneth L. *A comparison of body mechanics between novice and skilled divers.* M.S. in Physical Education, 1972. 176 p. (D. F. Mapes)
Data relative to skilled and 6 novice performances of each required dive were collected by taking motion pictures from the front and side views. The 5 required dives were front dive, layout; back dive, layout; reverse dive, layout; inward dive, layout, and front dive one-half twist, layout. Ss were measured from the same common points of reference on the body to form 6 body angles needed for the comparisons in the study. These angles were measured at 4 or 5 points in the various dive sequences. Findings indicated that novices overcompensated for incorrect body positions creating a lack of body stability throughout a dive. Extreme body positions and the failure to generate upward momentum through the hurdle caused the board to develop a greater eccentric thrust in the novices than in the skilled. Novices anticipated a dive more than the skilled at the last step before the hurdle, during the hurdle, and at the take-off. The skilled executed their dives higher and closer to the board than the novices. In back take-off dives, the novices lowered the center of gravity, whereas, the skilled raised theirs at the same point.

731 KOCEAN, Naomi L. *A development of a procedure and rating sheet for dynamic postural analysis.* M.S. in Physical Education, 1972. 66 p. (J. A. Robertson)
After developing a rating sheet and associated criteria for the evaluation of dynamic posture, these tools were used to assess the postures of 4th, 5th, and 6th grade children. Four college instructors who taught body mechanics served as judges. Ss were evaluated from a videotaping of their performances in a routine designed for the developed tool. Judges made dual and independent ratings on 2 separate sessions 4 days apart. Pearson product-moment rs for the intrajudge ratings were high and significant ($p < .05$). Interjudge rs were low and, with one exception, did not meet the t test for significance ($p > .05$). This was interpreted to mean that there was a disparity between the judges in the application and, therefore,

interpretation of the tool. It was concluded that a more intensive training period was needed for the judges in the use of this instrument.

732. **PARKER, Travis L.** *A brief history of the black male athlete in United States Olympic track and field, 1936-1968.* M.S. in Physical Education, 1972. 150 p. (H. S. Greer)

A questionnaire was sent to black male athletes ($N = 44$) who earned a medal in individual track and field competition in the Olympics from 1936-1968 in an attempt to determine how these individuals chose the Olympics as a goal, why they chose the specific event they competed in during the Olympics, and if the Olympics provided any long-term benefits for the athletes. Biographical sketches were presented on each athlete who qualified for consideration. The study appeared to indicate that the athletes competed in the Olympics for personal satisfaction; the athletes chose an event in which they had achieved early success; and, in order to train for the Olympics, the athletes sacrificed time that could have been devoted to study, social activities, or seeking employment.

733. **PETERSON, Mark E.** *A comparative analysis of pain tolerance between varsity football players, freshman football players, and the non-athlete.* M.S. in Physical Education, 1972. 30 p. (J. A. Colgate)

Ss were 39 varsity football players, 35 fresh. football players, and 40 nonathletes from nonmajor PE courses at Western Illinois Univ. The Gross Pressure Test and Ischemic Muscle Contraction Test were given to measure pain tolerance level. Findings revealed a difference ($p < .05$) between the varsity football player and the nonathlete in favor of the varsity player and between the fresh. football player and the nonathlete in favor of the fresh. athlete. There was no difference ($p > .05$) in pain tolerance level between the varsity and fresh. football players.

734. **POPKINS, Michael.** *An analysis of the values asserted by Roger Bannister concerning running: Essentialistic-progressivistic.* M.S. in Physical Education, 1972. 42 p. (K. M. Pearson)

Statements presented by Bannister in his novel, *The First Four Minutes*, were analyzed in an attempt to discover his reasons for running and whether these statements has progressivistic or essentialistic tendencies. An effort was also made to categorize these statements into the 3 philosophical divisions of metaphysics, epistemology, and axiology. Conclusions drawn supported the position that Bannister was eclectic in the realms of metaphysics, epistemology, and axiology.

735. **STILLWELL, Frances M.** *A study of locomotor skill retention of mentally retarded individuals.* M.S. in Physical Education, 1972. 28 p. (R. Aten)

A basic Motor Fitness Test developed at Temple University was used as the evaluative instrument to compare the retention of locomotor skills of institutionalized mentally retarded adults ($N = 40$). Movement patterns evaluated were the walk, creep, hop-left, hop-right, and run. Following a 2-wk. training period, the exp. group continued daily practice of the 5 locomotor skills while the control group participated in games utilizing skills unrelated to the locomotor skills. Three judges evaluated the Ss while they were participating in a posttest. The McNemar Test for group change in status revealed no difference ($p > .05$) between the group who received daily reinforcement of locomotor skills and the group who experienced a week time lapse from training. However, a breakdown of specific movement patterns indicated positive % results in favor of the exp. group.

736. **TESTONE, Angelo.** *Isokinetic training as a method to improve the vertical jump.* M.S. in Physical Education, 1972. 41 p. (D. F. Mapes)

Male Ss ($N = 40$) from nonmajor PE activity classes at Western Illinois Univ. were divided into a training and a control group. Ss were tested for vertical jump ability and for leg strength measures at the beginning and following a 6-wk. training program. The training group executed 15 leg extensions isokinetically on 2 Super Mini-Gyms 4 times weekly while the control group did not participate in any training program. Results of a t test for independent samples indicated gains in strength and the vertical jump for the training group. The control group had gains in strength but not in vertical jump. The difference between M strength gains of the 2 groups was in favor of the training group. All ts were tested at ($p = .05$).

University of Wisconsin, Madison, Wisconsin (J. G. Wolf)

737. **ADLER, Allen L.** *Inclusion and exclusion in the secondary physical education class.* Ph.D. in Physical Education, 1972. 126 p. (A. E. Jewett)

The dimension of inclusion-exclusion in secondary school PE classes was explored by asking the question: "Are teaching behavior, subject matter design, and nature and use of equipment related to inclusion-exclusion?" One class per male PE teacher in grades 7-12 in the public schools in Madison was selected to take the Inclusion-Exclusion Inventory (I-EI). The 3 classes with the highest and the 3 classes with the lowest I-EI scores were then subjected to intensive observation using the PE Observation Schedule (PEOS) created for this purpose. The M scores of the 2 groups on individual items of the PEOS were examined using the 2-tailed *t*-test. Classes of different teachers varied ($p < .05$) in the dimension of inclusion. Classes high in inclusion differed from those in exclusion in respect to items of teaching behavior, elements of the subject matter design, and aspects of the nature and use of equipment.

738. BAHRKE, Michael S. *Oxygen consumption in assisted ambulation.* M.S. in Physical Education 1972. 36 p. (B. Balke)

Three assistive devices (armpit crutches, forearm crutches, and cane) and 5 gaits (partial weight bearing, nonweight bearing, 2-point alternating, swing-through, and cane) were employed. Thirty-four measurements were collected for each of 10 Ss to determine the energy requirements for assisted and unassisted walking. Results indicate that O_2 consumption in assisted ambulation in comparison to unassisted ambulation is greatly increased. There appears to be little difference between the 2 types of crutches used in assisted ambulation. There is a difference in O_2 consumption between types of gaits, and if a choice of gait is available, partial weight bearing, 2-point alternating, and cane gaits offer more efficiency than nonweight bearing and swing-through gaits. Those who may benefit are people in need of walking aids who also have a limited cardiopulmonary reserve.

739. BLOOM, Joel A. *Structural models for physical education instruction.* Ph.D. in Physical Education, 1972. 167 p. (A. E. Jewett)

Three structural models were developed: strength development, development of endurance, and development of competency in aquatics. Univ. fresh. males ($N \times 116$) were tested in: ability to execute 4 tests of physical performance; understanding of certain concepts directly involved in physical performance; and attitudes regarding these concepts within the context of PE basic instruction. After pretesting, the Ss were assigned to the control group which was instructed traditionally or to the exp. group which was instructed following the format suggested by the structural models. Hypothesis suggested that the proposed models could be more effective than the traditional approach in achieving desired behavioral goals for both student and instructor. Hypothesis 2 stated that groups taught with the aid of the models would achieve higher M gains in the 3 test areas than would groups taught with the traditional approach. The data showed that the methods of presentation made no difference in the performance of the Ss. This factor indicated that the formats proposed by the models may not be radically different from those of traditional methods of presentation.

740. BURRIS, Barbara. *Measurement of aerobic capacity in college women.* Ph.D. in Physical Education, 1970. 141 p. (F. J. Nagle)

College women volunteers ($N=30$) served as Ss to determine the reliability of selected circulatory, respiratory, and metabolic responses to progressively increasing loads during treadmill walking, the reliability of max. treadmill and running performance, and the relationship of performance on a 12-min. run test to max O_2 consumption measured during a progressive treadmill test. The Ss performed 3 trials of the 12-min. run test, and 2 or 3 trials of a progressive treadmill test in which the speed was held constant at 3 mph and the grade was increased 2.5% each 2 min. until exhaustion. Measurements of the circulatory, respiratory, and metabolic responses were made every 2 min. throughout the progressive tests and during a prework rest and warm-up, and postwork recovery. Max performance on both the treadmill test and the 12-min. run increased from trials 1 to 2, but remained almost identical from trials 2 to 3. Performance on the 12-min. run correlated substantially (.73 to .77) with max $\dot{V}O_2$ and optimal work capacity. The observed circulatory, respiratory, and metabolic parameters showed a common tendency to be more reliable in work than during rest or warm-up. HR, systolic blood pressure, respiratory rate, V_T, inspired volume, and O_2 consumption became increasingly reliable as the workloads increased.

741. CAVILL, Michael J. *A mathematical and cinematographical analysis of propulsive effects in the dolphin butterfly.* M.S. in Physical Education, 1972. 86 p. (J. G. Wolf)

The objective of the research was to determine the relative arm and leg contribution to forward propulsion in the butterfly breast stroke. The S was a 14-year-old butterfly swimmer who possessed excellent form. A 16-mm. motion picture camera containing Tri X Reversal film with the shutter speed set at 64 FPS was used to film the swimmer. The arm pull accounted for 92% of the volume (the leg kick accounted for 8%) of water that was moved backward during a complete stroke cycle. Leg size and length does not appear to be a critical factor for butterfly swimmers, whereas, arm length and width were much more important.

742. CERNY, Frank J. *Rest and exercise pulmonary gas exchange in man during immersion in water.* Ph.D. in Physical Education, 1972, 160 p. (W. G. Reddan)

The purpose of the study was to determine the effects of water immersion on blood flow and gas exchange characteristics of the lung at rest and during exercise. It was hypothesized that, at rest, immersion to the neck would cause pulmonary vascular engorgement resulting in an increased pulmonary diffusing capacity (DLco) and that during exercise the factors controlling the pulmonary vascular bed would override this vascular engorgement, eliminating any land-water differences observed at rest. Six male students were studied at rest and over several levels of exercise on a bicycle ergometer with and without immersion to the neck. Pulmonary diffusing capacity (and its components capillary volume and membrane diffusion), ventilation, pulmonary blood flow, HR and SV, and arterialized acid-base blood status were observed under all conditions. Immersion caused an increase in pulmonary capillary blood volume at rest which was reflected in an increased diffusing capacity. This difference persisted during the lightest workload, but was removed during moderate and heavy exercise as the normal regulation of the pulmonary vascular system with exercise caused equal distribution of the pulmonary and perfusion. There were no differences in pulmonary ventilation, HR, pulmonary blood flow, or acid base status between the 2 conditions.

743. CLAREMONT, Alan D. *The effect of temperature on metabolism during prolonged exercise.* Ph.D. in Physical Education, 1972, 234 p. (F. J. Nagle)

An attempt was made to assess the body temp. effect on metabolism. Eight male adults performed bicycle ergometer exercise for 1 hr. on separate days at 0°C (hypothermic environment) and 35°C (hyperthermic environment), followed by 1 hr. of recovery observations at 25°C ambient temp. Observations were made of O_2 consumption, minute ventilation, muscle-rectal-skin temp., HR and blood lactate at identical ergometer loads requiring approximately 50-65% max. aerobic power. Decreased heat transfer gradients and increased body heat content due to sweat loss resulted in higher muscle and rectal temp. than were observed in the hypothermic environment. The higher body temp. responses in the hot environment were associated with higher O_2 repayments following work ($p < .025$) compared to the cold condition, despite the fact that the O_2 requirements were consistently higher in the cold (7% on the average). A partitioning of possible factors accounting for recovery O_2 consumption revealed that a considerable portion was attributable to a body temp. effect. The higher exercise HR and blood lactates measured in the hyperthermic environment reflected a necessity for a greater compensatory circulatory adjustment. The stimulus to increase the HR and blood lactate was apparently greater than the 7% elevation in aerobic demands observed in the cold condition.

744. DE TROYE, Yvonne Anne. *Student and teacher rankings of physical education objectives.* M.S. in Physical Education, 1972, 254 p. (A. E. Jewett)

SHS PE students and teachers were asked to complete 2 questionnaires indicating their rankings of PE objectives. The questionnaire included 26 objectives classified into 3 categories: man as a developing organism, man interacting in a physical environment, and man moving in society. An activity preference inventory, including the 3 top-ranked objectives from each of the 3 categories of the objectives questionnaire, was also used. The Ss were 356 boys and girls selected from grades 9-12, and 18 PE teachers from 2 SHS(s) in Madison, Wisconsin. The Mann-Whitney U Test and the Kruskal-Wallis One-Way ANOVA Test were used to determine whether differences existed between the various groups, and Dunn's Multiple Paired Comparison for Rank Sums was applied to determine between which grades differences occurred. Male respondent rankings were different from female respondent rankings, student rankings were different from teacher rankings, and there were differences among grade levels.

745. DARDA, Gerald F. *A method of determining the relative contributions of the diver and springboard to the vertical ascent of the forward three and one-half somersaults tuck.* Ph.D. in Physical Education, 1972, 102 p. (J. G. Wolf)

The purpose of the study was to develop a method for the determination of nationally ranked diver's efficiencies from a 3-meter duraflex springboard during the press and initiation of the 3.5 somersaults tuck dive. Two Kodak Cine Special 16-mm. cameras were used to simultaneously film the side view (profile) and front view of each dive. The shutter speed of each camera was set at 1/125 of a sec., camera speed, 64 FPS. The side view (80 ft. from the diver) was equipped with a 40-mm. lens and was used on the front view camera. Knowl[illegible] the spring characteristics of any spring board coupled with the knowledge of total vertical distanc[illegible] travel of the diver permits the determination of the degree to which the diver uses the springboa[illegible]ency) and the degree to which he uses his own energy in attaining ht. in a dive. Skilled divers [illegible] similar joint movements both during the [illegible] press and the initiation phase of the 3.5 somersaults dive.

746 DIXON, Gerald Ernest. *The study of boxing as an intercollegiate sport.* M.S. in Physical Education, 1972. 55 p. (F. Z. Cumbee)

The basic reasons underlying the discontinuance of competitive boxing at the intercollegiate level were examined. By use of primary and secondary sources, 2 hypotheses were supported: collegiate boxing was discontinued because of social pressure caused by the publicized deaths of collegiate boxers, and collegiate boxing does not present a greater risk than other contact sports.

747 FLEMING, William A. *The relationships of creativity, attitudes toward physical education and physical education activity skill of physical education students and their teachers.* Ph.D. in Physical Education, 1972. 134 p. (A. E. Jewett)

This investigation was to determine the relationships between measures of creativity, attitudes toward PE and PE activity skill of 223 SHS students and 11 PE teachers from 2 schools in Wauwatosa, Wisconsin. It was hypothesized that the concepts of teacher and student creativity, students attitude toward PE, and student PE skill are positively related. The Alpha Biographical Inventory provided a creativity score for the teacher and student Ss, and the Kneer Attitude Inventory measured the attitudes of the students Ss toward PE. The skill score assigned each student by his teacher represented the M skill ability of each student in all activities. Kendall's tau for rank order r was used for final analysis of the data. No relationship ($p < .05$) was found between teacher and student creativity, between student creativity and PE activity skill, or between student creativity and attitude toward PE. A positive relationship was found between creativity of the teacher and student attitudes, and a negative relationship between student skill and attitudes toward PE.

748 FRANCIS, James E. E. *Attitudes toward physical activity of physical education teachers and their twelfth grade male students.* M.S. in Physical Education, 1972. 84 p. (A. E. Jewett)

The purposes of this study were to: investigate the extent to which 12th grade male students were similar to their PE teacher in their attitude toward PE, assess the accuracy with which these students were able to perceive their PE teacher's attitude toward physical activity, and determine the attitude toward physical activity of physical educators and their students. The sample was made up of the entire 12th grade male PE class of 6 Wisconsin SHSs. The 212 students and 6 physical educators who participated in the study were administered an inventory devised by Kenyon to assess attitude toward PE. The students also completed a revised form of the Kenyon inventory devised by the writer. A positive relationship ($p < .10$) was found between teacher and pupil attitudes in 5 of the 6 participating schools. Two schools exhibited a positive relationship between student perception of teacher attitude and the teacher's actual attitude. Physical activity, when characterized as an aesthetic experience, as catharsis, and as health and fitness, occupied the top 3 positions in rank order of both students and teachers.

749 GIESE, Michael D. *The effects of 100% oxygen inhalation during recovery following intermittent work.* M.S. in Physical Education, 1972. 68 p. (F. J. Nagle)

The purpose of this study was to determine whether breathing 100% O_2 during recovery is a physiological aid to repeated 1 min. work bouts. Ten Ss were tested on a motor-driven treadmill running at a known workload requiring 140-150% VO_2 max., for 1 min., then resting while sitting for 2 min. This intermittent work was repeated until the S reached exhaustion or was stopped after 10 work bouts. Between the 15th and 90th sec. of the recovery interval, the Ss inspired room air or 100% O_2 from meterological balloons. Tests were performed on 2 occasions with the O_2 and room air treatments alternated. Comparisons were made of the ventilatory volume, HR, blood lactic acid, and number of work intervals between the 2 test conditions. Ventilatory volumes during work, HR during work, and blood lactic acid levels showed no differences ($p < .05$). The duration of work completed increased by 10.72%, M rest interval ventilatory volume decreased by 12.29%, and rest interval HR decreased 4 bpm. There does not appear to be a clearly delineated effect of O_2 as an ergogenic aid when administered during the recovery intervals in intermittent work. However, the M differences reported between the 2 test conditions were in a direction consistent with the plausibility of the argument for O_2 as an ergogenic aid.

750 GLEICHENHAUS, D. Peter. *Influence of food deprivation on aerobic capacity, marksmanship and selected psychologic states.* M.S. in Physical Education, 1972. 65 p. (F. Z. Cumbee)

A control and an exp. group were used to determine the effect of food deprivation on state anxiety, marksmanship, body wt., and aerobic capacity. Each group ($N = 9$) was tested over 6 times. A repeated measures ANOVA was used to analyze the data. State anxiety (as measured by the Spielberger scale) increased by food deprivation for 44 hr., and marksmanship, aerobic capacity, and body wt. were not influenced by food deprivation.

751 **HELLWEG, Dolores Ann.** *An analysis of perceptual and performance characteristics of the catching skill of 6-7 year old children.* Ph.D. in Physical Education, 1972. 157 p. (L. E. Halverson)
Ten successful and 10 nonsuccessful Ss, categorized on the basis of their catching skill, served as the comparison groups. Visual acuity, depth perception, and a rating of visual maturity were obtained through school screening tests. A perceptual task, designed to eliminate the motor response of contacting the ball, duplicated the process of judging ball path and interception point. A film analysis was utilized to investigate selected motor behavior characteristics. None of the selected visual, perceptual, or motor characteristics discriminated between the successful and nonsuccessful performers.

752 **JANSMA, Paul.** *Behavior modification principles applied to male adolescents by a physical educator in a mental hospital.* Ph.D. in Physical Education, 1972. 152 p. (A. J. Ryan)
The purpose of this study was to determine whether adolescent male socially inappropriate behavior could be altered via operant conditioning techniques by a physical educator in a physical REC setting, using physical activity basically as the reinforcement, or therapeutic tool. Six adolescent males were selected from The Goodland Hall east ward of the Mendota State Hospital. The target behaviors chosen included tic behavior, excessive question asking, and 4 distinct withdrawal type behaviors involving lack of participation in specified physical activities. After initial baseline data were gathered, explicit contingencies were constructed involving the systematic application and removal of consequential events based on a reversal design (ABAB), and either fixed interval or fixed ratio schedules of reinforcement. For each reversal design, exp. phases were analyzed by graphical inspection and the Mann-Whitney U Test. With the exception of only 1 comparison, all baseline-baseline, treatment-treatment, and baseline-treatment comparisons showed exp. control significance at the .05 level. Inter-rater reliability (IRR) was computed by means of the Spearman Rank Order Coefficient Correlation. All IRR calculations were above the .80 criterion level of acceptance. The major hypotheses of the study were supported.

753. **JONES, Lavetta Sue.** *The construct of body awareness in space as reflected through children's ability to discriminate directions, levels, and pathways in movement.* Ph.D. in Physical Education, 1972. 243 p. (A. E. Jewett)
The present study was undertaken to investigate and validate the construct Body Awareness which is an element from the Purpose-Process Curriculum Framework. A theory of Body Awareness was formulated and 3 tests were developed in order to measure selected components of the construct. The instruments were designed to measure abilities in discrimination and movement in various spatial coordinates. Ss were 64 1st and 3rd grade students. Results indicated that: the tests measure discrete constituents of the construct, there were no differences between males and females, and there were differences between 6- and 8-yr.-olds and between performance on motor and cognitive subtests.

754 **JORGENSEN, Jean.** *The relationship between perceptual style and rate of learning a novel movement task.* M.S. in Physical Education, 1972. 112 p. (M. R. Sloan)
This study determined the relationship between perceptual style as measured by Witkin's Rod and Frame Test, and learning a novel movement task, and studied the relationship between the field dependent-independent continuum of perception and rate of learning the novel movement task. Learning was measured by the amount of time necessary to reach criterion performance by 2 groups (N = 20) of female Ss representing continuum extremes. Regression analysis was used. The hypothesis of a relationship between perceptual style and motor learning was upheld, as the rate of learning for groups was different. The hypothesis of an inverse relationship between field dependence and rate of learning the novel task was upheld, with field independent Ss demonstrating a rate of learning more rapid than the field dependent Ss and the task was successful in functioning as a discriminator between groups, but not as a discriminator for individuals.

755 **KNOX, Douglas Frank.** *The development of a model for using environmental analysis in making long range programming decision for outdoor physical activity.* M.S. in Physical Education, 1972. 103 p. (A. E. Jewett)
A model was developed which will provide the program planner in PE with information necessary to make long-range decisions regarding the feasibility of outdoor activity at any time of year. The model combined elements of agrometeorology, engineering thermodynamics, exercise and work physiology, and bioclimatology. It described 3 possible solutions, evaluated 1 set of hypothetical data, and presented a set of hypothetical solutions. The proposed model could provide valuable information regarding the conduct of physical activity in relative comfort for expected climatic occurrences. The environmental variables which needed to be analyzed for employment in the model were: temp., vapor pressure of water, wind speed, cloud cover, incident solar radiation, and insulation of clothing and its associated

effective area for radiation. The physiological information required was only the metabolic cost of the activity to be performed.

756. McPHERSON, Barry D. *Socialization into the role of sport consumer: The construction and testing of a theory and causal model.* Ph.D. in Physical Education, 1972. 440 p. (L. A. Larson and G. S. Kenyon)

The purpose was to construct and test an axiomatic deductive theory and causal (path) model to explain the process of socialization into the role of sport consumption. Questionnaire items were constructed to represent the operational definitions from the literature. A sample of 157 male and 141 female cohorts was used. The degree of consumer role socialization is related to the number of significant others who consume sport, the frequency of sport consumption by significant others, the amount of interaction with significant others who consume sport, the number of sanctions received from others, the number of significant others in the family who are ego-involved in sport, the amount of primary sport involvement, the opportunity set to participate in sport, and the degree of system-induced propensity.

757. MILTON, Brian G. *Sport as a functional equivalent of religion.* M.S. in Physical Education, 1972. 140 p. (L. A. Larson and G. S. Kenyon)

A primary function of religion is integration. It was proposed that sport acts to integrate in a manner similar to that of sectarian religions. For sport to perform this function, it had to be demonstrated that as a phenomenon, it consisted of more than an isolated event or series of events. A justification for considering sport as a social institution was developed and presented. Integration was also examined to isolate its various dimensions as perceived by functional analysis. Finally, a definition of religion which encompassed the characteristics of sectarian religion was presented. It was concluded that sport acts as a functional equivalent of religion.

758. MUELLER, Margaret Robb. *Kinematics of speed skating.* M.S. in Physical Education, 1972. 98 p. (E. M. Roberts)

The pacing technique of 2 male skilled speed skaters was cinematographically analyzed by concentrating on: a joint action analysis of the supporting limb centered on flexion and extension of the hip, knee, and ankle, as well as pronation and supination of the foot, changes in segmental inclinations due to the joint actions, and measurement of the mean length, average deviation, and velocity of the stride. Joint angle and segmental inclination measures were facilitated by markings on the Ss which enabled tracing of the segment lines from the films. A technique of correcting distances distorted by photographic perspective was applied in measuring stride lengths and deviations from film tracings. The ankle joint remained relatively stable during the glide, then began the flexion which continued until the final force-producing extension. The knee joint extended and then flexed during the glide, as preparation for the final force-producing extension. The hip joint flexed and then extended while the opposite leg was in its force phase, with the extension continuing for the rest of the stride. The foot contacted the ice in a supinated position, pronated through the glide, and supinated for the force phase. The average stride length was 27 ft., with a lateral deviation of 5.5 ft., and an average velocity of 22 ft/sec.

759. OLDRIDGE, Neil B. *Myocardial revascularization, physical training and work performance.* Ph.D. in Physical Education, 1972. 118 p. (F. J. Nagel)

This study investigated the changes that occurred in work tolerance, estimated coronary blood flow and myocardial O_2 consumption and estimated myocardial dynamics following: myocardial revascularization, physical activity, or of conservative rehabilitation. Ten male CAD patients acted as Ss in phase 1 and 6 of those participated in phase 2. Work tolerance was assessed on the treadmill; coronary blood flow and myocardial O_2 consumption was estimated by the systolic pressure index; myocardial dynamics were assessed by the systolic time intervals. Comparisons were made before and after surgery and between the training group and control group before and after either physical training or conservative rehabilitation. The comparisons were made at rest, during work, and following work. Revascularization resulted in improved cardiovascular function in work determined from the absence of anginal pain, improved work performance, changes in systolic time intervals, and estimated myocardial O_2 consumption and blood flow. Twelve weeks of prescribed and supervised physical training resulted in greater improvements in work performance and estimated coronary blood flow and myocardial O_2 consumption than did 12 wk. of conservative rehabilitation. S-T segment depression during work was decreased following myocardial revascularization.

760. SCHUTZ, Robert W. *A theory of motor response organization and memory retrieval in choice reaction time tasks.* Ph.D. in Physical Education, 1972. 175 p. (L. A. Larson and G. S. Kenyon)

The purpose of the study was to develop a general theory of information storage and retrieval of simple motor tasks and to express it as a formal deductive system. Secondary purposes were to express aspects of this theory as a mathematical model and to empirically test the validity of the theory. A basic assumption upon which all theorems were founded was that a learned motor task is stored as a unitary engram in 1 of 3 possible storage areas, and the total time taken to search for the release of this engram is the sum of a number of separate additive time components. Five exp. conditions, 1 simple RT task, and 4 choice RT tasks were utilized to test the theorems. Response latencies for 720 trials were obtained from each of 12 Ss during 3, 1 hr., testing sessions. ANOVA was used. Goodness-of-fit tests of the observed frequency distribution of CRTs with that predicted by the mathematical model provided further evidence for testing the theorems. The empirical findings were generally in agreement with the proposed theory, providing strong support for 6 of the 9 theorems, but only partially verifying the other 3 theorems. Specifically, the theory did not account for the observed differences in CRTs obtained under different levels of task complexity, nor for the observed task complexity by response probability interaction. A revised theory was formulated in an attempt to account for the empirical findings not explained by the original version of the theory.

761 SMITH, LeRoy D. *Effects of an action-oriented teaching approach on student attitude toward physical fitness and exercise.* M.S. in Physical Education, 1972. 140 p. (A. E. Jewett)

This study investigated the effects of 2 teaching approaches on SHS student attitudes toward physical fitness and exercise. An action-oriented approach was compared to a classroom approach to teaching a health unit on physical fitness. An attempt was also made to define a relationship between attitude toward physical fitness and exercise and attitude toward PE, and correspondence between attitude toward physical fitness and exercise and participation in physical activity. A semantic differential Physical Fitness and Exercise Attitude Test and a Physical Activity Inventory were designed by the investigator and the Kneer Attitude Inventory was also used. The results showed no differences between the 2 exp. classes on either knowledge change or change in attitude toward physical fitness and exercise from the pretest to the posttest. No relationship was found between attitude toward physical fitness and participation in physical activity. A positive relationship was found between attitude toward physical fitness and attitude toward PE at the posttest. The effect of the action-oriented teaching approach on changing attitudes toward physical fitness or knowledge of physical fitness was not different from that of a traditional classroom approach.

762 SMITH, Michael D. *Assaultive behavior of young hockey players as a function of socioeconomic status and significant others' influence.* Ph.D. in Physical Education, 1972. 206 p. (L. Larson and G. Kenyon)

An attempt was made to construct a theory which would test the socioeconomic status (SES) and the influence of significant others in accounting for variations among individuals in assaultive behavior in sport, particularly ice hockey. Hypotheses tested were: 1. The lower the SES, a. the greater the assault, b. the more positive the normative reference group sanctions for assault, and c. the greater the selection of violent role models; 2. The more positive the normative reference group sanctions for assault, a. the greater the assault, and b. the greater the selection of violent role models; 3. The greater the selection of violent role models, the greater the assault. Ss were 83 male adolescents, 5 high SES schools, and 4 low SES schools who had teams in the Toronto Secondary Schools Athletic Association. The data was treated by factor analysis, multiple linear regression, and path analysis. Proposition 1.a. was not supported; 1.b. was not supported; 1.c. was not supported; 2.a. was not verified; 2.b. had partial affirmation; and 3. was verified.

763. THOMSON, John M. *Systemic oxygen transport during prolonged work to exhaustion.* Ph.D. in Physical Education, 1972. 155 p. (W. G. Reddan)

This investigation was concerned with changes in systemic O_2 transport during prolonged work to exhaustion. Of primary interest were the mechanisms enhancing O_2 off-loading at the working muscles in vivo. Six healthy male Ss (age 25-43 yr.) walked at 3.5 mph on a graded treadmill at 61 to 68% of their max. aerobic capacity to exhaustion (i.e., X time to exhaustion = 74 min.). Brachial arterial and *deep* femoral venous blood were sampled simultaneously with intravascular temp. being recorded at 9-min. intervals throughout the exercise period and at exhaustion. Throughout the prolonged work, systemic O_2 transport was maintained by a number of adaptations: (1) a progressive reduction in O_2-hemoglobin affinity in vivo due to: a) a rise in intravascular temperature (to 40.7°C at exhaustion), b) a decrease in femoral venous pH (to 7.266 at exhaustion), and c) a $P_{50(7.4,37)}$ shift to the right at exhaustion (2.2 mm Hg in 3 Ss only); (2) the maintenance of arterial homeostasis ($C_aO_2 = 19.5 \pm 0.5$ to 20.3 ± 0.5 ml/100 ml, pHa = 7.400 ± .012 to 7.377 ± .120); (3) a sustained elevation of cardiorespiratory factors over time—in particular, muscle blood flow and phenomena on O_2 and CO_2 transport.

764 WATSON, Emily. *A comparison of the leadership ability of high school girls in regular physical education and those in a leadership class.* M.S. in Physical Education, 1972. 100 p. (A. E. Jewett)

Leadership ability was studied as it was found in SHS girls participating in a leadership class, or in regular PE at Niles Township East HS in Skokie, Illinois. Leadership was defined as a student's ability to work well with others, to assume responsibility in the groups to which the individual belongs, and to show initiative in developing and carrying out ideas. A leadership ability score derived from the use of the Minnesota Counselling Inventory was used to determine the leadership ability of 20 soph. and 19 sr. girls in regular PE, or in a leadership training class. ANOVA was used to determine whether the grade level and the selection process caused a difference in the leadership ability of the students. The results indicated that there was no difference in this ability of girls in a leadership class in PE and those in regular PE, and that leadership ability of sr. girls was greater than that of the soph.

765 WHITE, Wesley. *Relationships of aspects of body concept, creativity and sports proficiency.* Ph.D. in Physical Education, 1971. 256 p. (A. E. Jewett)

The purpose of this investigation was to determine degrees and patterns of relationships among concepts seen as making up a frame of reference for "movement education." Major hypotheses stated the following concepts are positively related: body concept, body awareness, body esteem, motor creativity, verbal creativity, and sports proficiency. Second order hypotheses posited that on the variables making up movement education, low groups are more proficient in closed skills than in open skills, whereas high groups are equally proficient in both open and closed skills. English schoolboys (N=122) in the 13-to-15-yr.-old age range were Ss. Correlation and comparison of proportions strategies were used to test statistical hypotheses. Motor creativity was positively related to body awareness, verbal creativity, and sports proficiency. Body concept and verbal creativity were positively related to sports proficiency. Differential proficiency between open and closed skills did not distinguish between low and high groups on the major variables of movement education. Small clusters of concepts of movement education did not account for substantial portions of the variance in individual concepts.

766 WIENCKE, Bonnie. *The roundoff: A mechanical analysis of a skillfully executed gymnastic stunt.* M.S. in Physical Education, 1972. 89 p. (E. M. Roberts)

A skilled execution of a roundoff was mechanically analyzed for the purpose of investigating the forces of motion. Bi-plane 16-mm. motion pictures provided the data. Linear displacement measurements of the centers of gravity of each body segment were made in the primary plane of movement from the time the "lead leg" left the floor, until both feet recontacted the floor. The motion of the center of mass of the body was calculated from the motion of the segments. To allow for measurement error inherent in data collection procedures, the displacement data curved using a cubic spline function fit. Velocity and acceleration were mathematically derived from the curved displacement data. The forces of motion and the corresponding changes in momentum were calculated. An upward displacement of the center of gravity of the body, which could only be attributed to force exerted by shoulder girdle muscles, occurred as the hands were leaving the floor. Contrary to existing literature, active flexion at the hips, as the hands left the floor, did not occur. Momentum developed by the legs was transferred to the trunk affecting rotation of the body during final flight. Over 50% of the horizontal momentum of the center of gravity of the body was maintained.

767 ZERNICKE, Ronald F. *Single motor unit control in the m. biceps brachii.* M.S. in Physical Education, 1972. 48 p. (J. C. Waterland)

This study was an attempt to investigate parameters of motor control in the multiple headed m. biceps brachii. Motor control was assessed through volitional regulation of single motor unit activity. M (N=36) graduate and undergraduate students at the Univ. of Wisconsin were Ss. Results consisted of timed attempts to isolate and regulate single motor unit activity, electromyograms, and photographic data. Timing data indicate a higher level of motor control in the m. biceps brachii caput breve, than in the caput longum. Electromyograms of single motor unit activity were more definitive for subjects attempting motor control in the caput breve than in the caput longum. The evidence presented suggested that the degree of motor control is higher in the m. biceps brachii caput breve, than in the m. biceps brachii caput longum. The differentiation of volitional motor control between the multiple heads of the same muscle provides additional information concerning the neuromuscular control of human movement.

University of Wisconsin-La Crosse (R. W. Batchelder)

768 HETZEL, Michael W. *An assessment of aerobic and anaerobic energy cost of college basketball players.* M.S. in Physical Education, 1972. 88 p. (W. A. Floyd)

The study was designed to determine aerobic and anaerobic energy requirements of basketball players involved in full court pressure style basketball. The parameters measured were recorded in an actual game, and in a treadmill test in the laboratory. The 6 Ss were members fo the 1972 Univ. of Wisconsin fresh. basketball team. It was concluded: given almost the same HR, forwards will use more O_2 than the guards; the anaerobic energy system is used more exclusively by the forwards than by the guards; and based on a 100-point scale, 83% of all energy used to play this particular style of basketball is aerobic in nature.

769 LEADLEY, Rodney B. *The influence of stride length on the energy-expenditure and duration heart rate during a distance run.* M.S. in Physical Education, 1972. 66 p. (P. K. Wilson)

The study was designed to determine whether stride distance fluctuation would affect the energy expenditure, as measured by O_2 consumption and O_2 debt, of a distance runner during a submax. treadmill test. A subproblem of the investigation was to determine whether stride distance fluctuation affects the duration HR of the distance runner at the end of a submax. treadmill test. Ss (N=8) were members of the 1971-72 Univ. of Wisconsin cross-country team. The runners were required to utilize a short stride, a normal stride, and a long stride during a submax. run on a treadmill. During the run and during the recovery from that run, the selected physiological parameters were recorded. ANOVA was utilized. The conclusion was that there was no difference between the amount of energy expended or the duration HR during the running of the tests.

770 MILLONZI, Frank. *Development and validation of a handball skill test.* M.S. in Physical Education, 1972. 63 p. (W. A. Floyd)

This study was designed to develop a valid handball skill test for all skill levels. Twenty male Ss made up of students and instructors from the Univ. of Wisconsin and members from the YMCA took part. The Ss competed in 2 separate round robin tournaments containing 10 players each. Their rank order was determined by the results of these tournaments. The investigator then administered a devised skill test consisting of 23 tests to group 1 and the test items that correlated at .60 or better with the rank order were given to group 2. Together the *r* criterion of .60 from group 1 and the rank order from group 2 resulted in a very high *r* of .93 thus making the final battery of test items valid.

771 PAKE, James. *The construction of a knowledge test.* M.S. in Physical Education, 1972. 77 p. (J. Foss)

The problem was to construct a PE basic activity knowledge test for 6th grade students. The major concern was foundations of movement. The items (N=180) were evaluated in 2 ways: by a panel of professional educators in ELE education and PE, and by the use of an item analysis. The tests were evaluated by the Kuder-Richardson measure of reliability and by a summary table for analysis of written test as established by the "University Examination Service of the State University of Iowa." The conclusions were: the final test is a satisfactory measure of knowledge for 6th grade students; the test can be used in conjunction with any ELE PE curriculum; and the test can also serve as a guide in construction of future teacher-made tests.

772. STEFFEN, Daniel T. *A study to determine the relationship of body fat to hip flexibility and cardiovascular fitness.* M.S. in Physical Education, 1972. 55 p. (W. A. Floyd)

This study was conducted with 25 males from the Univ. of Wisconsin varsity football team. The tests were administered over a 2-wk period in the human performance lab at the Univ. of Wisconsin. Each S was administered 3 tests, the BBFA, the WS&RT, and the BTT. The Pearson Product Moment *r* was used to determine the correlations of −0.23 and −0.27 between body fat and hip flexibility, and body fat and cardiovascular fitness, respectively. A sample *t* test for correlated data was used to test the significance between the Ms. It may be concluded that higher values of body fat did not affect hip flexibility or cardiovascular fitness.

773 WILLIAMS, Timothy Harry. *The effects of participation in gymnastics upon shoulder girdle strength as compared to tumbling.* M.S. in Physical Education, 1972. 47 p. (P. K. Wilson)

The investigation was designed to determine if exposure to gymnastics developed shoulder girdle strength to a greater degree than exposure to tumbling. The data for the study was recorded during a pre- and posttest for each of the activities. The 63 Ss were 7th grade boys from the Lincoln JHS in La Crosse, Wisconsin. The control group (N=30) scheduled for a unit in tumbling and the exp. group (N=33) scheduled for a unit in gymnastics. Each group was exposed to their respective units of instruction for a period of 6 wk. The Upper Extremity Strength Test was utilized to determine shoulder girdle strength during the pre- and posttest for both groups. Only 1 trial was required at the pre- and posttest. ANCOVA revealed that there was no difference in the shoulder girdle strength developed from exposure to gymnastics, as compared to shoulder girdle strength resulting from participation in tumbling.

774. WONDERGEM, Ray. *A study of physical education participation and physical fitness development in trainable and educable mentally retarded children.* M.S. in Physical Education, 1972. 58 p. (L. Goodwin)

The problem in this study was to evaluate the frequency of PE participation on the muscle fitness and organic fitness level of trainable and EMR children. Subproblems included: PE programs taught by certified physical educators and/or student teachers; an integrated PE program; and a special education school with no formal PE instruction. The 1 group pre- and posttest research design method was used for gathering data. Ss were pre- and posttested with the "FPFT for the Mentally Retarded." A 27-wk. time duration elapsed between pre- and posttest. The researcher had no influence on the Ss PE programs. The data collected were treated with the student's t test for measurement of within group differences. No differences were found in any group in muscle fitness or organic fitness.

775. YINGLING, Harry D. *The relationship between maximal competitive heart rate and maximal laboratory heart rate.* M.S. in Physical Education, 1972. 72 p. (P. K. Wilson)

This study was designed to investigate 3 questions concerning competitive and lab. attained HR. First, the relationship between cardiovascular exertion, measured by HR during track competition, and lab. attained max. HR, next, the relationship between different phases of events during track competition, and third the percentage relationship between max. competitive HR and max. lab. HR. The Ss were members of the 1972 Univ. of Wisconsin Indoor Track Team. The Pearson Product-Moment coefficient of r was used. Additional analysis involved the determination of the percentage relationship of lab. attained HR to competitive HR, as well as the examination of competitive HR during specific phases of the event. Conclusions: HR does not increase proportionally to the length of the specific competitive track event; a greater degree of cardiovascular exertion was attained by the Ss at the conclusion of the event than during other phases of the event; the track events produced a relatively similar degree of exertion upon the cardiovascular system of the Ss at phase 6; the longer distance runs produced a lower preevent HR than the shorter track events; and the greater percentage of acceleration during phases 2 and 3 of each event produced the greatest increase of HR.

University of Wyoming, Laramie, Wyoming (J. B. Woods)

776. CLAUSEN, Douglas A. *The combined effect of aerobic exercise and vitamin E upon cardiorespiratory endurance and measured blood variables.* M.S. in Physical Education, 1971. 77 p. (J. B. Woods)

This study attempted to determine which of 3 treatments—aerobics and vitamin E, aerobics and placebo, or vitamin E with no exercise—would produce a beneficial increase in cardiorespiratory endurance. The Ss were 18 to 23-yr-old males. The Ss gave 2 blood samples at 3 separate times and were tested for max O_2 intake at: pretest, 5 wk. and 9 wk. The aerobic exercise and vitamin E treatment produced an increase ($p < .10$) in max O_2 intake during the period of pretest through week 5. The aerobic plus placebo, and the vitamin E with no exercise, treatments did not produce a change in max O_2 during the same period. The M changes in hemoglobin for aerobic exercise with vitamin E and aerobic exercise with placebo were different from each other. The treatment aerobic exercise plus vitamin E produced a decrease in serum triglycerides for the time period week 5 through week 9. The other 2 treatments did not produce a change. The results indicate that aerobic exercise and vitamin E when combined are effective in increasing cardiorespiratory endurance. These 2 treatments do not seem as effective when used separately.

777. SIMMONS, Roger W. F. *The effects of ingested alkali on the work capacity of trained swimmers.* M.S. in Physical Education, 1971. 56 p. (J. B. Woods)

Varsity swimmers (N=8) were assigned to 4 subgroups; sprinters, ingesting alkali or a placebo and middle distance, ingesting alkali or a placebo. All swimmers were given a pretest, and at intervals of 7 days posttests were conducted. During posttesting the exp. group ingested alkali compounds and the control group a placebo. These were administered in 7 doses, beginning 2 days before a swim test and ceasing at least 5 hr. before the test. On the afternoon of the last posttest, 3 venous blood and urine samples were taken at 2, 3.5, and 5 hr. after the ingestion of alkali or placebo. The 3 venous blood samples were analyzed for values of PCO_2, pH, and hemoglobin content and base excess was determined from these values. The urine samples were titrated and total alkali excreted was determined. ANOVA using the data collected from the swimming test times did not reveal any difference in the times of those swimmers who ingested alkali and those ingesting a placebo. However, t indicated that the sprint swimmers who ingested alkali improved ($p < .05$) over those swimmers ingesting a placebo. The Wilcoxon 2 ST and the Wilcoxon's SRT showed that the untrained swimmers of the exp. group excreted greater amounts of total alkali than did the control group.

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